United States Court of Appeals for the Second Circuit



PETITIONER'S BRIEF

TAL-1687

IN THE UNITED STATES COURT OF APPEALS FOR THE SECOND CIRCUIT

No. 74-1687

HOOKER CHEMICALS AND PLASTICS CORPORATION STAUFFER CHEMICAL COMPANY AND MONSANTO COMPANY,

Petitioners,

v.

RUSSELL E. TRAIN,

Respondent.

On Petition For Review Of Action Of The Administrator Of The Environmental Protection Agency

BRIEF FOR PETITIONERS

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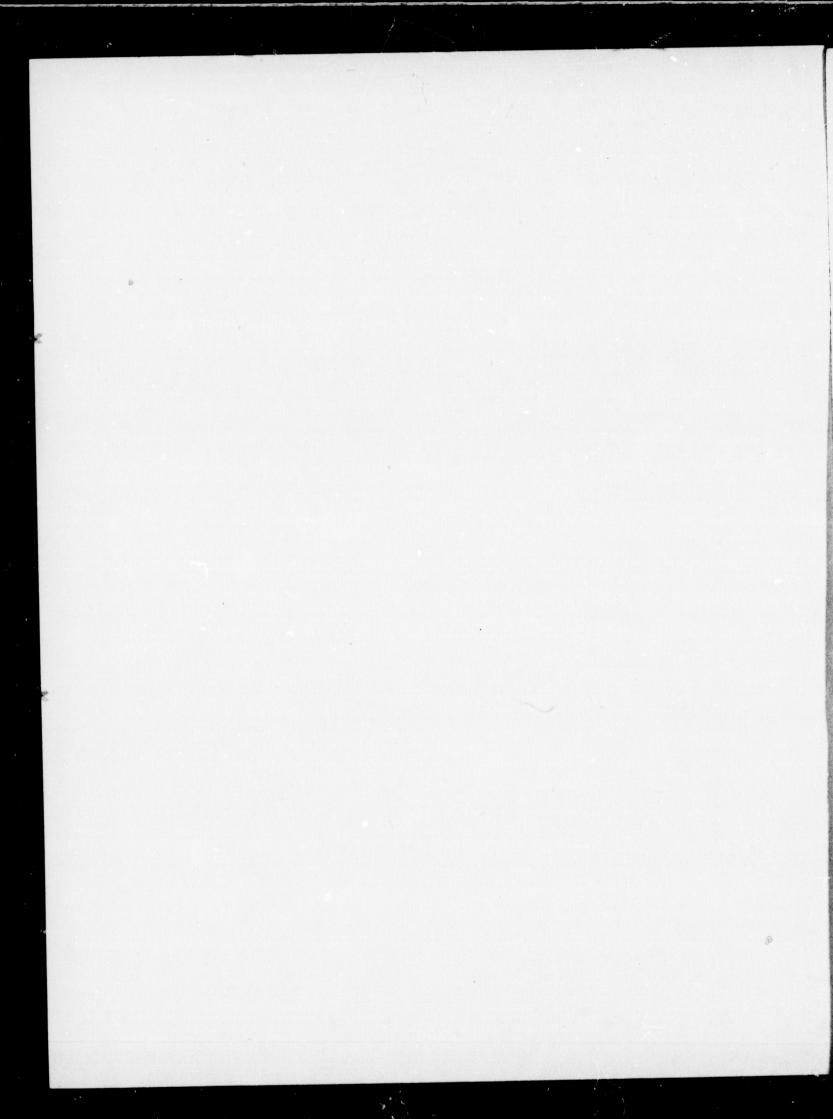


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Petitioners,

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RUSSELL E. TRAIN,

Respondent.

BRIEF FOR PETITIONERS

Preliminary Statement

This is an action to review and set aside regulations establishing effluent guidelines for phosphate manufacturing issued on February 20, 1974 (39 Fed. Reg. 6579) by the Environmental Protection Agency (EPA) under Section 304(b) of the Federal Water Pollution Control Act, as amended ("the Act"), 33 U.S.C. §1314(b).

This action raises basic legal issues respecting the proper interpretation to be given key regulatory sections of the Act and issues of a combined technical and legal nature pertaining to the substantive regulations themselves. The phosphate manufacturing category is made up of 3 separate subcategories involving 8 different products, all of which are at issue in this case.

^{1/} Petitioner and Respondent under date of September 9, 1974 filed a stipulation and motion to file a single Deferred Consolidated Joint Appendix in this case and No. 74-1683. The record has been paginated by the Government. To avoid confusion, the Government's pagination will be used in the portion of the record included in the deferred Appendix. The Appendix is cited herein as "App."

The Parties

Petitioners are manufacturers of phosphate products, including the products subject to the regulations here in issue.

Russell E. Train is the Administrator of EPA.

Questions Presented

- 1. Does this Court have jurisdiction to review, on a petition for review, regulations issued by EPA under Section 304(b) of the Act?
- 2. Can EPA change the statutory pattern of review by claiming that the regulations it has issued are also "limitations" under Section 301 with the asserted consequence that regulations under Section 304(b) are reviewable only in the Court of Appeals?
- 3. Has EPA complied with the Administrative Procedure Act when it asserts that regulations it proposed under only Section 304(b) were in fact promulgated also as limitations under Section 301?
- 4. Do the regulations issued by EPA for the phosphate industry comply with the requirements of Section 304(b) of the Act?
- 5. Has EPA arbitrarily applied an abstract definition of "process wastewater" limiting or prohibiting discharges from phosphate industry plants?
- 6. Are EPA's effluent guidelines for phosphorus, phosphorus oxychloride, phosphorus trichloride, phosphorus pentasulfide, food grade sodium tripolyphosphate, and food grade calcium phosphate plants supported by the Record?
- 7. Has EPA failed to make a reasoned statement for its actions which complies with the law?

Statutes and Regulations Involved

Sections 301, 302, 304, 306, 307, 309, 505 and 509 of the

Act (33 U.S.C. §§1311, 1312, 1314, 1316, 1317, 1319, 1365 and 1369)

are set out in Appendix A, infra. The regulations here in issue

were published on February 20, 1974 (39 Fed. Reg. 6579), appear in

the Record at pp. 1313-1319, and are set out in Appendix B, infra.

Jurisdiction

Petitioners contend that this Court does not have jurisdiction to review these regulations, but that the review should be in the District Court under the Administrative Procedure Act (5 U.S.C. §§701-706) and under the jurisdictional provisions of the Judicial Code, 28 U.S.C. §§1331, 1332, 1337, 1361 and 1651. However, Petitioners filed these petitions as a "protective" measure because EPA has taken the position that review in the Courts of Appeals under Section 509(b) of the Act, and not review in the District Courts, is required. The difficulty in this case is due to the fact that, given EPA's view, petitioners had to file for review in this Court within 90 days of the promulgation of the regulations or risk losing entirely their right to challenge the effluent guidelines.

Petitioner Monsanto Company is an intervenor in an action in this Court (Natural Resources Defense Council, Inc. v. Environmental Protection Agency, No. 74-1258) in which this jurisdictional issue has been presented and briefed by the petitioner, by the intervenors, and by the Government (EPA). Additionally, the jurisdictional issue has been raised in the Brief for Petitioner in a similar "protective" proceeding in the U.S. Court of Appeals for the Fourth Circuit brought by some fifteen companies, including Stauffer Chemical Company and Monsanto Company, challenging effluent guideline regulations for inorganic chemicals. See E.I. DuPont de Nemours & Company v. Train, No. 74-1261 (4th Cir.).

STATEMENT OF THE CASE

The Administrative Proceedings

In September 1973, EPA published proposed guidelines for the phosphate industry. (38 Fed. Reg. 24470 (September 7, 1973); App. 1177-1183.) On February 20, 1974 the final regulations for the phosphate manufacturing industry were published. (39 Fed. Reg. 6579; App. 1313-1319.)

Scope Of Action

Part One of this brief discusses the issue of whether jurisdiction lies in this Court under Section 509(b) of the Act. Part Two deals with the question of whether EPA's regulations conform to the Act in that EPA has failed to set forth the factors specified in Section 304(b) and its methodology is inconsistent with the Act. Part Three focuses on the specific issues raised by the regulations for the phosphate category.

This action on the effluent guidelines is related to the petition for judicial review in No. 74-1683, in which EPA's standards of performance for new sources under Section 306 of the Act are at issue. This case involves complex legal issues not present in No. 74-1683, the substantive requirements for effluent guidelines differ from those for new source standards of performance, and the issues on the record in this case will be reached only if the Court determines that it has jurisdiction. However, EPA promulgated both sets of regulations at the same time and its factual bases and

rationale for the two regulations are similar and in some cases identical. Petitioners have included in the brief in No. 74-1683 references to this brief and, in that way, hope to assist the court in avoiding repetition should both cases be heard by the same panel of the Court.

The Statutory Framework

The Federal Water Pollution Control Act, as basically and extensively revised by the 1972 Amendments, constitutes the organic statute under which all effluent discharges from industrial plants and municipalities are regulated.

The Act prohibits all discharges except as they are permitted under the law. (§301, 33 U.S.C. §1311.) Permits for effluent discharges are issued under Section 402 of the Act (33 U.S.C. §1342) and the limits and conditions which restrict the discharge of an individual industrial plant are fixed in the permit after proceedings conducted under Section 402.

The permit procedure is based on the Congressional policy that the primary responsibility for water quality protection shall be given to the States. (§101(b), 33 U.S.C. §1251(b).) EPA is required to turn the permit granting authority over to the States when State programs meet the requirements of the Act. (See §402(b)-(f), 33 U.S.C. §1342(b)-(f).)

Section 301 of the Act (33 U.S.C. §1311) identifies the objectives to be achieved with respect to existing plants:

- (1) By 1977 the effluent limitations shall require application of "best practicable control technology currently available."
- (2) By 1983 and thereafter the level is "best available technology economically achievable" (including elimination of discharges when it becomes "technologically and economically achievable").

Section 301 provides that these technological objectives shall be $\frac{1}{2}$ defined and determined in accordance with regulations under Section 304(b).

Section 304(b) regulations are to be comprised of two component parts. First, they must identify the degree of effluent reduction attainable by 1977 through the application of "best practicable control technology current available" for classes and categories of point sources (§304(b)(1)(A)). Second, they must also "specify factors to be taken into account in determining control measures and practices to be applicable to point sources . . within such categories and classes" (§304(b)(1)(B)). Congress explicitly set out the factors which EPA was to specify and elaborate with further precision in the regulations. The effluent guidelines relating to the 1983 requirement of "best available technology economically achievable" also must include the degree of effluent reduction and specification of the factors to be considered. (§304(b)(2)(A) and (B)).

The statute uses the term "defined" in Section 301(b)(1)(A) in providing for achievement of the 1977 objectives, and the term "determined" in Section 301(b)(2)(A) in providing for achievement of the 1983 objectives.

The guideline regulations under Section 304(b) of the Act,

33 U.S.C. §1314(b), are to be applied through the permit program to

achieve effluent limitations. The effluent guideline regulations

are at issue in this proceeding.

Summary of Argument

- 1. EPA proposed for comment and promulgated the regulations here in issue as Effluent Guidelines pursuant to Section 304(b) of the Act. Regulations under Section 304(b) are not reviewable under Section 509, and are reviewable only under the Administrative Procedure Act in District Court. Recognizing that fact, EPA has argued that these regulations are also limitations under Section 301. EPA fails to appreciate that the Act does not provide a procedure for establishing effluent limitations under Section 301 by regulation apart from their being set through conditions of a permit issued pursuant to Section 402. The "effluent limitations" referred to in Section 301 are set in permit proceedings for particular plants and play a very different role in the statutory scheme than effluent guidelines issued under Section 304(b).
- 2. The regulations fail to satisfy the statutory requirements of Section 304(b). On the face of the statute, the guidelines are to identify the elements of technology and specify the factors relevant to its application so that the guidelines are susceptible of reasoned application to widely varying and specific fact situations by the permit granting authorities so as to achieve the uniformity which Congress wanted. EPA itself has recognized the need for flexibility

in the regulatory mechanism.

- 3. EPA's methodology based on categorization of industry falls short of the statutory direction in Section 304(b) to set out the factors applicable within each category. EPA utterly failed to evaluate the applicability of technology employed by "exemplary plants" to non-exemplary plants. Moreover EPA's method does not include adequate evaluation of cost, benefit, energy and non-water environmental impact required by the Act.
- 4. Under applicable principles of review an agency must give a satisfactory reasoned statement showing it has considered the relevant factors in applying the statute. Here EPA did not.
- 5. EPA's regulations prohibit or limit the discharge of "process wastewater pollutants" by the phosphate industry. It has defined that critical term in the abstract and arbitrarily applied it to plants in the phosphate category without regard to the facts in the record.
- 6. EPA's 1977 effluent guideline under Section 304(b)(1) of the Act for elemental phosphorus plants is completely inconsistent with the bases and data which EPA explicitly cites in support of the regulation. The 1983 effluent guideline under Section 304(b)(2) requiring zero discharge was promulgated without support in the record and is directly contradicted by EPA's own findings as to the impossibility of total recycle in cold climates and areas where precipitation exceeds evaporation.

- 7. The 1983 zero discharge affluent guideline for phosphorus trichloride and phosphorus oxychloride is based on undemonstrated technology for reduction of waste flows and evaporation and completely disregards the excessive energy requirements which EPA misleadingly understated.
- 8. The 1977 and 1983 effluent guideline of no discharge from phosphorus pentasulfide plants is based on unsupported speculation as to in-process changes or recycle technologies that have not been applied or even considered by the phosphate industry and are without any support in the record.
- 9. EPA has failed to take into account at all the impact of application of its 1977 and 1983 effluent guideline for sodium tripolyphosphate plants on the stringent product purity requirements of the Food and Drug Administration (FDA) applicable to food grade vis a vis detergent grade sodium tripolyphosphate.
- 10. EPA's separate 1983 effluent guideline for food grade calcium phosphates rests on an erroneous assumption as to the effluent reductions achievable by available technology and an unsupported "expectation" that recycle can be accomplished consistent with FDA requirements for food grade calcium phosphates.

ARGUMENT

PART ONE

THIS COURT DOES NOT HAVE JURISDICTION UNDER THE PROVISIONS OF SECTION 509 OR ANY OTHER STATUTE TO REVIEW THE EPA EFFLUENT GUIDELINE REGULATIONS

A. Review Under Section 509 Is Limited To Actions Taken Under Specified Sections of the Act And Does Not Include Actions Under Section 304(b)

The normal method of review of actions by the Administrator under the Federal Water Pollution Control Act is under the Administrative Procedure Act, 5 U.S.C. §§701-706, as complemented by such ancillary jurisdictional statutes as the Mandamus and Venue Act of 1962, Pub. L. 87-748, codified in 28 U.S.C. §1361. See, e.g.,

Peoples v. United States Department of Agriculture, 427 F.2d 561, 564-565 (D.C. Cir. 1970). Congress chose, however, to establish a special review in the Court of Appeals for selected, specific, identified acts by the Administrator. Section 509(b), 33 U.S.C. §1369(b), provides:

"(b)(1) Review of the Administrator's action (A) in promulgating any standard of performance under section 306, (B) in making any determination pursuant to section 306(b)(1)(C), (C) in promulgating any effluent standard, prohibition, or pretreatment standard under section 307, (D) in making any determination as to a State permit program submitted under section 402(b), (E) in approving or promulgating any effluent limitation. or other limitation under section 301, 302, or 306, and (F) in issuing or denying any permit under section 402, may be had by any interested person in the Circuit Court of Appeals of the United States for the Federal judicial district in which such person resides or transacts such business upon application by such person. Any such application shall be made within ninety days from the date of such determination, approval,

promulgation, issuance or denial, or after such date only if such application is based solely on grounds which arose after such ninetieth day.

"(2) Action of the Administrator with respect to which review could have been obtained under paragraph (1) of this subsection shall not be subject to judicial review in any civil or criminal proceeding for enforcement."

Nothing in the legislative history suggests that Section 509
was intended to be more inclusive than its terms state or that
regulations under Section 304(b) establishing effluent guidelines
impliedly are to be reviewed under Section 509. This analysis is
confirmed by the subsequent history of the legislation. While Congress
in 1973 amended the Act to correct "oversights or incorrect references",
and, in the course thereof, modified Section 509, the sole change was to
designate pretreatment standards under Section 307(b) as being subject
to review under Section 509.

A general statutory judicial-review plan to have all actions by EPA reviewable in the District Court except those designated in Section 509(b) is shown by the many actions of EPA listed in Appendix C, which are reviewable under the Administrative Procedure Act in the same manner as the guidelines at issue here. Notably also, all actions taken under the authority of the Federal Water Pollution Control Act by $\frac{4}{4}$ agencies other than EPA are reviewable initially in the District

^{1/} See Pub. L. 93-207, 87 Stat. 906.

^{2/} H.R. Rep. No. 93-680, 93d Cong., 1st Sess. (1973).

^{3/} Significantly, the inclusion of these pretreatment standards under Section 307(b) was not accompanied by inclusion of pretreatment guidelines under Section 304(f), 33 U.S.C. §1314(f).

^{4/} These actions include important adjudicatory and rulemaking decisions by agencies such as the Corps of Engineers, the Coast Guard, the Federal Maritime Commission, and the Council on Environmental Quality.

Courts under the Administrative Procedure Act.

Congress had a logical goal in mind when in Section 509 it limited review in the Court of Appeals to such specified actions. Each of the substantive sections listed in Section 509 contains a prohibition, or authorizes EPA to promulgate regulations or to approve specially (without promulgation in regulations) restrictions or limitations which may in certain circumstances be enforced by EPA (and the courts) directly against a violator pursuant to the provisions of Section 309, 33 U.S.C. §1319. Moreover, the prohibitions, regulations, or specially-approved limitations or restrictions of the listed substantive sections may also be enforced by "citizen suits" brought against violators under Section 505(a), (f) of the Act, 33 U.S.C. §1365(a), (f). As a result, a special, definitive mode of review in the Court of Appeals was deemed appropriate.

On the other hand, review of actions by EPA other than those listed in Section 509 and by other agencies empowered to act under the Act were to proceed under the otherwise-applicable provisions of the Administrative Procedure Act. Review of these other actions, including the regulations constituting the effluent guidelines under Section 304(b), might be fully as important as review of the specially-listed actions, but the regulations issued under the non-specified

sections often contemplate or require that further implementing steps be taken by the agency involved or by a court before direct applicability of such regulations is achieved. 1

- B. EPA's Recently-Adopted Claim That the Regulations Also Constitute Effluent Limitations Under Section 301 Contravenes The Administrative Procedure Act
 - 1. The regulations establishing effluent guidelines were, as required by the Act, promulgated under Section 304(b)

The Act was passed and became effective October 18, 1972.

Section 304(b) provides that "the Administrator shall publish regulations providing guidelines for effluent limitations within one year of enactment."

When EPA did not meet the one year deadline, the Natural Resources Defense Council brought suit in the District Court in the District of Columbia and on Motion for Summary Judgment, the Court issued an order which stated in part that:

- "1. Defendants [EPA] have a mandatory, nondiscretionary duty to publish within one year of enactment of the Act <u>final Section 304(b)(l)(A) effluent limitation guidelines</u> necessary to provide comprehensive coverage of all point source discharges;
- 2. The proposed schedule for publication of the guidelines shall have a final deadline of no later than October 1, 1974, in order that the guidelines may be applied meaningfully in the NPDES permit program established by Section 402 of the Act." Natural Resources Defense Council, Inc. v. Train, 6 E.R.C. 1033 (D.D.C. 1973) (emphasis added)

^{1/} A similar pattern in which some administrative actions are reviewable in Courts of Appeals under special provisions while other actions are subject to the normal District Court review is found in other statutes. See <u>Abbott Laboratories</u> v. <u>Gardner</u>, 387 U.S. 136 (1967) (Food, Drug and Cosmetics Act).

In August 1973 EPA announced the public review procedures with respect to "effluent limitations guidelines, standards of performance, and pretreatment standards for new sources pursuant to Sections 304(b), 306 and 307(c) of [the Act]." (App. 1011, 38 Fed. Reg. 21202 (August 6, 1973) (emphasis added). The notice further (1) stated that its purpose was to "explain EPA's overall plans for development of effluent limitations guidelines . . . and the approach which is being taken by the Agency in discharging the duties placed upon the Administrator under [section] 304(b) . . . of the Act"; (2) emphasized the importance of public "exposure of the technical basis and reasoning underlying regulations to be established pursuant to Section 304(b), 306 and 307(c)"; (3) explained that the technical studies for which EPA contracted were to "serve as a foundation for the regulations to be issued under Section 304(b) and 306 of the Act"; and (4) requested comments on "its overall approach and legal interpretation of its responsibilities under Sections 304(b), 306 and 307(c) of the Act." (38 Fed. Reg. 21202, 21203, 21206 (August 6, 1973), App. 1011, 1012, 1015 (emphasis added).)

Thereafter EPA followed this indicated reliance on Section 304(b) in actually proposing guidelines for various categories of effluent dischargers. For example, the statement of "legal authority" in

^{1/} Section 306 relates to National Standards of Performance for control of effluents from new plants and Section 307(c) relates to pretreatment standards (i.e., standards governing the pretreatment of waste being discharged into a municipal treatment plant). Those standards were promulgated concurrently with the guidelines, but do not overlap with them and are not relevant to this action.

the preamble to the proposed regulations for the phosphate industry relies specifically and solely on Section 304(b) for authority:

This statement of legal basis for the regulations was incorporated by reference and without modification in the preamble to the final regulations published on February 20, 1974. The final guideline regulations for the phosphate manufacturing category are "Part 422" of "Subchapter N--Effluent Guidelines and Standards". App. 1314.

EPA now claims that these regulations constitute "effluent limitations" under Section 301(b) as well as guidelines under Section 304(b), and further, that the status of the regulations as limitations far overshadows their mere "definitional" character as guidelines.

EPA first publicly stated this position when it released for public distribution an "Environmental Protection Agency Memorandum on Judicial Review of Effluent Limitations Guidelines", dated February 25, 1974 (attached infra as Appendix D, and also reprinted at 4 Environ-

[&]quot;The legal basis . . . which support[s] promulgation of this [phosphate manufacturing category] regulation [was] set forth in substantial detail in the notice of public review procedures published August 6, 1973 (38 Fed. Reg. 21202) and in the notice of proposed rulemaking . . . " App. 1313, 39 Fed. Reg. 6579 (February 20, 1974).

ment Reporter, Current Developments, at 1833-1834). It subsequently elaborated such position in, inter alia, in its brief to this Court in Natural Resources Defense Council v. EPA, No. 74-1258.

2. It is too late under the Administrative Procedure Act for EPA to claim that the regulations constitute effluent limitations under Section 301

EPA's action in asserting that it had issued the final Section 304(b) guidelines as effluent limitations within the meaning of Section 301(b) as well came as a surprise to those persons and firms who were interested in the guidelines and in their impact.

Obviously, guideline regulations, when issued in a form which not only identified the technology but also contained the specific factors bearing on its application, could be applied effectively in a permit proceeding on an individual industrial plant to achieve the technological goals set out in Section 301. EPA at first seemed to be willing to travel this statutorily-specified path. But, through an evolution of views, EPA seems to have resolved to convert what were proposed as guideline regulations into actual effluent limitations which would be "mechanically" applied to a plant or discharge point source to which it was relevant. (See Defendants' Supplemental Memorandum, at 3, E.I. DuPont de Nemours & Co. v. Train, No. 74-57-R (W.D.Va.).)

EPA's action in only now denominating the regulations as effluent limitations at the very least constitutes rulemaking without notice and by fiat; under such circumstances the status of the regulations as limitations contravenes the rudimentary notice and opportunity-to-comment requirements of Section 4 of the Administrative Procedure Act, 5 U.S.C. §553. See Wagner Electric Corp. v. Volpe, 466 F.2d 1013 (3d Cir. 1972); cf. Pharmaceutical Mfrs. Assn. v. Finch, 307 F. Supp. 858 (D. Del. 1970). In the Wagner Electric case, the Court of Appeals set aside a regulatory standard promulgated by the National Highway Traffic Safety Administration in comparable circumstances.

C. The Act Does Not Contemplate or Authorize Effluent Limitations Prescribed by Regulation

The Act and the regulatory scheme it establishes demonstrate that the Administrator has no power to establish effluent limitations by regulation. Section 301(b), 33 U.S.C. §1311(b), provides in part that:

"(b) In order to carry out the objective of this Act there shall be achieved—

(1)(A) not later than July 1, 1977, effluent limitations for point sources. which shall require the application of the best practicable control technology currently available as defined by the Administrator pursuant to Section 304(b) of this Act . . . "

Section 301 carefully provides that the "objective" to be "achieved" is effluent limitations at the technical level described, not that

the effluent limitations be separately established by rule. Furthermore, no procedure for establishing limitations from effluent guidelines is contained in Section 301(b). Notably also, in view of the many other time limits for various rulemaking steps, Section 301(b) contains no time limit for establishing limitations—although, of course, the objective is that the limitations at the two levels set forth in Section 301(b) must be achieved by July 1, 1977 and July 1, 1983.

The one-year deadline for publication of Section 304(b) guidelines underlines the Congressional intention that the guidelines be
available to establish the range of base points to be used in processing
permit applications under Section 402. A "moratorium" until December
31, 1974, on enforcement of most violations of the Act where applications for Section 402 permits were pending was written into Section
402(k) of the Act, 33 U.S.C. §1342(k). Thus, Congress reserved the
first year for development of the procedural rules and the substantive
effluent guidelines (under Section 304(b)) and then allowed a period
of one year and several months for implementation through the permit
process.

Given this tight time schedule, Congress decided not to have EPA develop binding or prescriptive effluent limitations independently by regulation. Rather, by providing specifically for regulations

constituting effluent "guidelines". Congress allowed rapid development of regulations which would offer some play in the joints of the entire regulatory scheme to correct any difficulties created in their application to the many and varied individual permit situations without jeopardizing the achievement of the broad goals of Section 301.

The effluent guidelines are to provide the range of effluent reductions (under Section 304(b)(1)(A) and (2)(A)) which EPA finds achievable by use of best practicable and best available technologies from the application of technical, engineering and economic expertise to the information obtainable within the tight time constraints of the Act. EPA's specification of the factors specified in Section 304(b)(1)(B) and (2)(B) provide the criteria for applying those ranges to individual plants.

Section 402 respecting permits for discharges knits together these statutory threads. It is in permit proceedings that the effluent reduction ranges established by EPA are to be applied in accordance with

[&]quot;Guidelines" are employed in other areas of law where a range of actions is reasonable and appropriate and hard and fast rules are not deemed suitable. For example, HEW issues guidelines and not prescriptive regulations for school desegregation plans.

United States v. Jefferson County Board of Education, 372 F. 2d 836, 847-848 (5th Cir. 1966), cert. denied, 389 U.S. 840 (1967). The Council on Environmental Quality has issued rules (40 C.F.R. Part 1500, 38 Fed. Reg. 20550 (August 1, 1973)) to aid in the implementation of Section 102(2)(C) of the National Environmental Policy Act (NEPA), 42 U.S.C. §4332(2)(C), which provide guidelines and do not constitute or "prescribe regulations governing compliance with NEPA". Greene County Planning Board v. Federal Power Commission, 455 F. 2d 412, 421 (2d Cir.), cert. denied, 409 U.S. 849 (1972).

the objective factors elaborated and set forth by EPA in the effluent guidelines. The result are effluent limitations which even-handedly require point sources to achieve the requirements of Section 301 by compliance with specific, concrete, and enforceable, effluent limitations in discharge permits.

Section 402 also establishes the link in the Federal-State partnership mandated by the Congress. Under Section 402(b)-(f), a State can develop a suitable plan for implementing a permit program and thereby displace the permit program established by EPA under Section 402(a), for the State's geographical area. To be an appropriate "approved" program the State permit program must, among other things, apply the substantive requirements set by the Act and by the Administrator for point source discharges. §402 (b)(1).

When the approval of the State permit program serves to transfer permit authority to the State through operation of the Act, EPA is not divested of all control over the permit process in that State.

Not only are the States required to apply the effluent guidelines promulgated by EPA, but the Congress in Section 402(d) provided

^{1/} Fifteen States have qualified and are administering the permit program. 39 Fed. Req. 26061 (July 16, 1974).

for review and veto by the Administrator of individual permits issued by States with approved programs.

"No permit shall issue * * * if the Administrator within ninety days of the date of transmittal of the proposed permit by the State objects in writing to the issuance of such permit as being outside the guidelines and requirements of this Act."

(Emphasis added.)

It is difficult to see how the Congress could be more explicit in its intention and direction that the regulations under Section 304 become the means enabling the permit authorities (EPA or the States) acting under Section 402 to fix effluent limitations in the permits so that the "objectives" set out in Section 301 would be "achieved".

EPA has argued that the judicial review provisions of the Act (§509, 33 U.S.C. §1369) imply that effluent limitations at least can exist in the form of regulations issued under Section 301, and thus that there is implied authority in the Act for such regulations.

This argument was made in the publicly-distributed EPA Memorandum dated February 25, 1974, from Alan G. Kirk, II, the Assistant Administrator for Enforcement and General Counsel (attached as Appendix D).

Rather than supporting EPA's claim, the provisions of 509 and other related sections indicate clearly that Congress had no

^{1/} The Administrator may also invoke a statutorily-set procedure for withdrawing the approval for the State program, under Section 402(c)(3). But this withdrawal of approval is a drastic remedy which would eliminate the State completely as a participant in the Act's scheme.

intention that effluent limitations be established by regulation under Section 301.

The definitional section of the Act provides that--

"The term 'effluent limitation' means any restriction established by a State or the Administrator on quantities, rates, and concentrations of chemical, physical, biological, and other constituents which are discharged from point sources into navigable waters, the waters of the contiguous zone, or the ocean, including schedules of compliance." (§502(11), 33 U.S.C. §1362(11) (emphasis added).)

Obviously a State could not issue regulations implementing

Section 301, so the definition itself indicates (1) that effluent

limitations do not involve regulations and (2) that the States and

the Federal EPA have a shared role in establishing effluent limitations.

Section 509 provides in relevant part that--

"(b) (1) Review of the Administrator's action . . .

(E) in approving or promulgating any effluent limitation or other limitation under section 301, 302, or 306 . . . may be had by any interested person in the Circuit Court of Appeals of the United States . . . "

(§509(b)(1), 33 U.S.C. §1369(b)(1) (emphasis added).)

One, and only one, of these three listed sections provides for 1/actual promulgation of effluent limitations by the Administrator.

Section 302(a) authorizes the Administrator to promulgate "water quality-related effluent limitations" when the Administrator finds that

I/ There is a very minor exception to this statement that all "promulgation" of limitations occurs through the authority provided by Section 302. Section 301(c) contains a limited provision which takes effect after July 1, 1977, and which appears to provide EPA with authority actually to promulgate a special limitation for a single point source directly by Order and not by regulation. Such an order would modify to make less restrictive the 1983 requirements in certain carefully specified circumstances.

"the application of effluent limitations required under section 301(b)(2) of this Act [the technology-based limitations required to be achieved by 1983], would interfere with the attainment or maintenance of that water quality in a specific portion of the navigable waters which shall assure protection of public water supplies, . . . [etc.]." (33 U.S.C. §1312(a).)

This "water quality" effluent limitation is to be set after notice and after a public hearing, and after consideration of factors specified in Section 302(b) for "a point source or group of point sources" (§302(a)). The Administrator's action in setting "water quality"-related effluent limitations under Section 302 would be a "promulgati[on]" of such a limitation such that review of this action could be had under the terms of Section 509(b)(1)(E), 33 U.S.C. §1369(b)(1)(E).

In contrast, the reference to Section 301 in Section 509(b)(1)(E) is related to the action by the Administrator in "approving" effluent or other limitations. Thus, the Administrator can veto, or in other words, fail to approve, a permit if it does not meet the "guidelines and requirements of the Act." This reference of course includes the EPA regulations under Section 304(b) establishing effluent guidelines, for these are to be available within a year after enactment of the 1972 Amendments for the States to use in drawing up the permits. And, through use of the effluent guidelines, the State is to set in the permit the effluent limitations within the meaning of the definition found in Section 502(11). As a result, in reviewing the

proposed permit forwarded by the State, EPA is reviewing and approving or disapproving the effluent limitations set by the State in that proposed permit.

Consequently, Section 509(b)(1) authorizes review in the Federal Courts of Appeals of EPA action in reviewing the terms of a State-proposed permit. Among other things, this provision solved for Congress the problem of how Federal review could be obtained for a State-issued permit. Congress could, and did, have Federal judicial review attach to the one aspect of Federal involvement in the otherwise entirely-State proceeding.

Section 309 also contains several references to effluent limitations which implement Section 301, but in Section 309 the references to the presence of the limitations in State permits are explicit.

Section 309(a)(1) refers to a

^{1/} Earlier versions of the bill that became the Federal Water Pollution Control Act Amendments of 1972 actually required EPA to take the affirmative step of approving the permit's effluent limitation before the State-proposed permit could become effective. S. 2770 (the bill which ultimately became law) in the form in which it was passed by the Senate provided that: "No permit shall issue until the Administrator is satisfied that the conditions to be imposed by the State meet the requirements of the Act." (S.2770, §402(d)(2), 92d Cong., 1st Sess. (1971), reprinted in Senate Committee on Public Works, A Legislative History of the Water Pollution Control Act Amendments of 1972, 93d Cong., 1st Sess., at 1690 (Committee Print, 1973) (hereinafter "Legislative History").) Understandably, at that time the language of Section 509(b) contained the "approving or promulgating" reference (see id., at 1713) which it still retains, although in the enacted version of the bill the EPA review function has changed slightly to one of having to make a disapproval.

"violation of any condition or <u>limitation</u> which <u>implements section 301</u>, 302, 306, 307, or 308 of this Act in a permit issued by a State under an approved program under section 402 of the Act . . . " (Emphasis added.)

See also, Sections 309(a)(3), 309(c)(1) and 309(d) (all of which refer to <u>limitations</u> in permits issued "by the Administrator or by a State"). These references show beyond doubt that States, and the Administrator as well, are to place the effluent limitations in permits, and that necessarily such limitations apply only to the effluent discharge restricted by the permit.

In short, the language of Section 509 was carefully drafted by Congress to take account of the special place effluent limitations were to have in the statutory scheme. Since effluent limitations under Section 301 were not to be "promulgated" through regulations issued by EPA, the "approving" language had to be inserted in Section 509(b)(1)(E) to provide for judicial review of EPA's action in reviewing effluent limitations contained in proposed State permits forwarded to EPA under Section 402(d). Where EPA itself had the permit-issuing authority, Federal judicial review in the Courts of Appeals of the effluent limitations in the permit was provided by Section 509(b)(1)(F) which deals with action by the Administrator in issuing or denying any permit under Section 402.

^{1/} Section 509(b)(1)(D) carefully distinguishes review of EPA's cetermination as to a State program from review of EPA's action in approving limitations fixed in State permit proceedings under Section 509(b)(1)(E).

PART TWO

I. EPA HAS FAILED TO FULFILL ITS RESPONSIBILITY
TO PROVIDE THE COURT WITH AN ADEQUATE STATEMENT
OF REASONS AND RATIONALE FOR ITS REGULATIONS

If this Court determines that it does have power to review the EPA effluent guideline regulations at issue here, the standard of review is that prescribed by Section 10(e) of the Administrative Procedure Act, now 5 U.S.C. §706:

"The reviewing court shall--

- "(2) hold unlawful and set aside agency action, findings, and conclusions found to be--
 - "(A) arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law;
 - "(C) in excess of statutory jurisdiction, authority, or limitations, or short of statutory right . . ."

In carrying out a similar Congressionally-mandated judicial review function respecting provisions of the Clean Air Act, as amended, where legal and technical issues were also intertwined, Judge Leventhal noted that:

"[T]he necessity to review agency decisions, if it is to be more than a meaningless exercise, requires enough steeping in technical matters to determine whether the agency 'has exercised a reasoned discretion' . . . We cannot substitute our judgment for that of the agency, but it is our duty to consider whether 'the decision was based on a consideration of the relevant factors and whether there has been a clear error of judgment' . . . Ultimately, we believe, that the cause of a clean environment is best served by reasoned decision-making." (Portland Cement Ass'n v. Ruckelshaus, 486 F.2d 375, 402 (D.C. Cir. 1973) (emphasis added).)

To serve this judicial-review function, courts have obliged EPA to provide a statement of reasons and a rationale for its regulatory decisions, such that "the basis for . . [its] decision should [will] appear clearly on the record, not in conclusory terms but in sufficient detail to permit prompt and effective review". Environmental Defense Fund v. Hardin, 428 F.2d 1093, 1100 (D.C. Cir. 1970). See also Dry Color Mfrs. Ass'n, Inc. v. Department of Labor, 486 F.2d 98, 105-107 (3d Cir. 1973); Kennecott Copper Corp. v. EPA, 462 F.2d 846 (D.C. Cir. 1972).

The record in this case is voluminous (nearly 2000 pages) and

EPA has issued numerous documents in which it could have stated in a

comprehensible manner the rationale and factual basis for its regulations.

In August 1973, EPA announced a public review procedure with respect

to effluent guidelines, including those for the phosphate industry.

38 Fed. Reg. 21201, App. 1010-1015. EPA's procedure in developing

facts was to use a contractor (General Technologies) who surveyed

an industry and made a report. The Contractor's Report on phosphate

products appears in the record. App. 100-200.

On September 7, 1973, EPA published a notice that it was proposing effluent guidelines for the phosphate manufacturing industry.

38 Fed. Reg. 24461, 24470, App. 1177-83. Shortly thereafter, it released a Draft Development Document in which EPA's methodology was described and proposed findings and conclusions were made. App.

1016-1176. It also issued a Draft Economic Analysis of the proposed regulation prepared by an outside contractor (A.D. Little, Inc.)

App. 184-1243.

The final regulations were published on February 20, 1974.

39 Fed. Req. 6580, App. 1313-19. Although not available until
several weeks after the regulations were promulgated, EPA prepared
a final Development Document. App. 1644-1800. EPA did not publish a
final Economic Analysis of the impact of the regulations on the industry
and, thus, it appears never made the analysis required by its own
methodology to determine whether the guidelines are "practicable"

(1977) or "economically achievable" (1983).

Throughout the rulemaking proceeding it was pointed out to the Agency that, despite the volume of its output, it was frequently impossible to discern the Agency's rationale for its regulations, to determine how the Agency derived the guidelines from the factual information cited, or to relate the raw data compiled on the industry to the factual conclusions reached by EPA. E.g., App. 1248-53. Petitioners, and the Court, continue to labor under this handicap as is pointed out below in discussions of particular issues.

- II. THE REGULATIONS ESTABLISHING EFFLUENT GUIDELINES DO NOT COMPLY WITH THE STATUTORY REQUIREMENTS
- A. EPA Has Failed To Specify Factors Relevant To The Actual Application Of Technology As Required By Section 304(b)

To comply with the statute, guideline regulations must first identify the degree of effluent reduction attainable through (for 1977) "the best practicable control technology currently available for classes and categories of point sources . . . " (§304(b)(1)(A)) (and for 1983) through application of "best control measures and

practices achievable including treatment techniques, process and procedure innovations, operating methods, and other alternatives for classes and categories of point sources . . . " (§304(b)(2)(A).)

These provisions clearly envision regulations identifying the ranges of effluent reduction levels from applying effluent control to existing plants:

"In defining best practicable for any given industrial category, the Committee expects the Administrator to take a number of factors into account. * * * In effect, for any industrial category, the Committee expects the Administrator to define a range of discharge levels, above a certain base level applicable to all plants within that category. In applying effluent limitations to any individual plant, the factors cited above should be applied to that specific plant.

"The Administrator should establish the range of best practicable levels based upon the average of the best existing performance by plants of various sizes, ages, and unit processes within each industrial category."

(S. Rep. No. 94-414, 92d Cong., 1st Sess., at 50 (1971), Legislative History, at 1468 (emphasis added).)

The Congress underlined that purpose by directing that the regulations, in addition to identifying achievable effluent reductions, "shall . . . specify factors to be taken into account in determining control measures and practices to be applicable to point sources" within the categories and classes the EPA was directed to establish. (§304(b)(1)(B) (emphasis added).) There can

be no doubt as to this intention with reference to 1983 for EPA is directed to specify factors in determining the application of the control measures applicable "to any point source" within the classes or categories (§304(b)(2)(B)). EPA, for the 1983 effluent guideline, can look to the best performers or performer in an industry for a reference point in specifying the range of achievable effluent reductions. S. Rep. 92-414, 92d Cong., 1st Sess., at 50 (1971), Legislative History, at 1468. But EPA's responsibility to specify the factors to be taken into account in establishing the requirements for a particular plant remains clear and unequivocal.

Congress actually listed in Section 304(b) the specific factors that must be considered and elaborated by EPA in the regulations:

(1) the cost, and for the 1977 guideline, cost in relation to the benefits to be achieved, vital determinations;

(2) "age of equipment and facilities", a matter obviously of importance in the application of technology which otherwise might require total rebuilding;

(3) "the process employed" and "process changes" and there are variations in process with respect to each

product or category;

(4) "the engineering aspects of the application of various types of control techniques", dealing not only with the type and age of plant but climatic conditions and availability of land, a factor which has a direct bearing on how the technology can be applied and its cost in relation to benefits; and (5) "non-water quality environmental impact (including energy requirements)" making it necessary to consider the comparative environmental benefits and hazards for increased generation of electricity, from the production and deposit of solid waste and from the impact of the pollution control facilities on surrounding areas.

It is clear why Congress was so detailed and exact in specifying what should go into the guideline regulations. Given the policy of State-Federal partnership and hence over fifty potential permissuing authorities, the permit authorities need regulations specifying not only effluent reduction numbers based on an appropriate technology but the factors to be determinative in deciding how the technology should be applied to achieve uniformity, <u>i.e.</u>, similar treatment of plants with similar characteristics.

In the introduction to the guidelines, EPA acknowledged that

Congress intended that it issue guidelines with "some flexibility"

to take into account the complexities of the specified plant situations.

App. 1316. Yet, EPA did not, as the statute explicitly demands,

specify in the guideline regulations the factors to be considered

in accounting for these complexities. Instead of following the

congressional mandate, EPA has simply fixed a single number limiting

scharges without any elucidation as to statutory factors, and

purports to permit a plant to show that the "factors" applicable to

it are "fundamentally different from the factors considered in the

establishment of the guidelines." Identical provisions are in each

part of the regulations establishing the 1977 guidelines. See, e.g.,

EPA's belated assertion that it has promulgated a range of values because the single numbers are cast as maximums (Preamble to Final Regulations, App. 1315) is specious given its methodology of basing its guidelines on one or two of the best performers without evaluation of other plants (pages 34-37, infra) and ludicrous when the guideline is no discharge.

40 C.F.R. §422.12, App. 1317. EPA did not incorporate such a provision into the 1983 guidelines regulations.

Apart from EPA's broad statement that it considered all of the statutory factors (Preamble to Proposed Regulations, App. 1178), the guideline regulations and preambles thereto provide no clue to a reviewing Court or to the permit-issuing authorities for identifying key "factors bearing on the practicability of control technology" (Preamble to Final Regulations, App. 1316) or determining what consideration was given to such factors. And there is no guidance in the regulations to the permit-issuing authorities as to what standard should be applied to determine if certain factors are "fundamentally different" from those considered by EPA.

EPA apparently has recognized the ambiguities of the approach it adopted and its potential shortcomings as a substitute for the statutorily mandated regulatory mechanism. On August 12, 1974, EPA published a notice inviting public comment "on the necessity for the variance clause and the manner in which it should be interpreted and applied." (39 Fed. Reg. 28926-27 (August 12, 1974)).

Petitioners agree with EPA that Congress intended "some flexibility" in the guidelines. Had EPA followed the statute and included in its regulations the factors bearing on the application of the technology, the flexibility foreseen by the Congress would have been incorporated in the guidelines.

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^{1/} The Development Document prepared by EPA respecting the phosphate guidelines is not part of the regulations.

B. EPA's Approach To Establishing Industry Classes And Categories Was Improper

Sections 304(b)(1)(A) and (E), (1977 Guidelines) and 304(b)(2)(A) and (B) (1983 Guidelines), all speak of "classes and categories of point sources." What Congress had in mind, obviously, was that the regulations issued under those subsections were to identify the effluent reduction attainable through appropriate treatment technology for both 1977 and 1983 and to specify the factors to be taken into account in applying that technology, on a basis which reflected not only the major industrial "categories" but also "classes" within such categories.

The prime difficulty with EPA's approach to classification is that it tried to use the step to accomplish too much. EPA used the factors only to establish the "classes" or subcategories within a major industrial category, and then dispensed with any specification of the factors in the regulations. Preamble to Final Regulations, App. 1317; Development Document, App. 1690-93. This approach cannot be sanctioned under the Act because it flatly requires that the specification of factors, just like the identification of effluent reduction, be made on a "classes and categories" basis.

Further, the classification step cannot possibly take into account age of plant, cost-benefit balance, non-water environmental impact, and energy requirements as required under Section 304(b)(1)(B) and (b)(2)(B). These factors, along with the others listed, must be specified and elaborated in the regulations implementing Section 304(b) for application in permit proceedings under Section 402.

C. EPA Improperly Identified Effluent Reduction Based Upon Exemplary Plants

For each of the "classes and categories of point sources",

Sections 304(b)(1)(A) and (b)(2)(A) require EPA to identify in the

guideline regulations the degree of effluent reduction attainable

through the application of the technology appropriate for either 1977

or 1983. One of the critical factors which EPA must consider and

elaborate on in the regulations is the "engineering aspects

of the application of various types of abatement technologies."

(Section 304(b)(1)(B) and (b)(2)(B) (emphasis added).)

EPA's methodology, in fact, in developing the guidelines for the phosphate industry was to obtain limited data on a small minority of plants, to select, usually, one plant as "exemplary" and to base the single number guidelines on the alleged performance of that plant. EPA's analysis of the technology applied by its exemplary plants generally consists of terse, ambiguous identification of a generic technology. It rarely discusses the application of that technology to other plants and the few discussions are superficial in the extreme. In some instances, no exemplary plant or even literature is cited by EPA to support its conclusory statements on control technology.

The Act on its face demands far more of EPA. The legislative history emphasizes that the Congress expected EPA to apply its expertise and judgment, not merely write broad-reaching regulations on the supposed achievements of single plants or supposed technologies

without assessment of the technical and economic merits of that practice and its applicability to a representative segment of the industry.

In determining the levels making up the range for each subcategory of the 1977 effluent guidelines, the legislative history shows that the starting point is industry-wide performance within the relevant subcategory. Congress indicated that the only exception was for "those industrial categories where present practices are uniformly inadequate . . . " (S. Rep. 92-414, 92d Cong., 1st Sess., at 50 (1971), Legislative History, at 1468.)

In all circumstances, however, the point of departure must be an engineering assessment of the performance of at least a representative sampling of plants within the relevant industrial category. A specification of the 1977 effluent reduction based on performance by a single "exemplary" plant without evaluation of the application of the technology used by that plant to other plants in the industry is not in conformity with Congress' intention.

Even such instances must independently meet a criterion of viability:

"By the term 'currently available' the Committee means a
control technology, which, by demonstration projects, pilot
plants, and general use, has demonstrated a reasonable level
of engineering and economic confidence in the viability of the
process at the time of commencement of actual construction of
the control facilities." (H. Rep. No. 92-911, 92d Cong., 2d Sess.,
at 101 (1972), Legislative History, at 788. (emphasis added).

The legislative history also leaves no doubt that the 1977 "best practicable"-based effluent reduction involves only control and treatment measures applied to waste waters after they leave the manufacturing process. ("end-of-pipe" as opposed to "in process" controls). (E.g., H. Rep. No. 92-911, 92d Cong., 2d Sess., at 101 (1972), Legislative History, at 788 (emphasis added).)

As in the case of the 1977 guidelines, Section 304(b)(2) of the Act and the legislative history show that the 1983 guidelines are to be determined upon evaluation of a variety of considerations, after a survey of the entire range of actual performances in the affected industry subcategory. Again the degree of effluent reduction identified in the guidelines should be expressed as a range of values. However, the 1983 guidelines may be based upon a single best performing plant, rather than on the average of the best performing plants, in a relevant subcategory. (S. Rep. No. 92-414, 92d Cong., 1st Sess., at 50 (1971), Legislative History, at 1468 (emphasis added).)

The technology underlying the 1983 guidelines must be "available" or, ordinarily, in use at one plant in the industry. However, the legislative history indicates that the technology need not always be in actual use. If it is not in actual use in the industry, the technology must have been "demonstrated" to be viable for the relevant industry. In describing the technological basis for the 1983 effluent guideline, the House conference manager stated that Congress meant

"those plant processes and control technologies which, at the pilot plant or semi-works levels, have demonstrated both technological performance and economic viability sufficient to reasonably justify the making of investments in new production facilities." (118 Cong. Rec. H9118 (daily ed. October 4, 1972) (Mr. Jones of Alabama referring to the Statement of the Managers, House Debate on Conference Report), Legislative History, at 232; See, S. Rep. 92-414, 92d Cong., 1st Sess., at 51-52 (1971), Legislative History, at 469-70.)

These are the benchmarks of technological and economic certainty which govern EPA's application of its expertise in establishing effluent guidelines. The results of EPA's refusal to accept its responsibilities and its adherence to a superficial "exemplary" plant approach are the wholly arbitrary regulations discussed below.

PART THREE

I. EPA'S DEFINITION OF PROCESS WASTE WATER IS ARBITRARY AND CAPRICIOUS

Each of the effluent guidelines for the phosphate industry

applies to the discharge of process waste water pollutants or the

discharge of pollutants in process waste waters except the 1977

effluent guideline for the phosphorus producing subcategory which

limits the "quality or quantity of pollutants or pollutant properties * * *

which may be discharged by a point source [phosphorus plant] subject

to the provisions of this part." 40 C.F.R. §422.12, App. 1317.

There is no EPA explanation for this discrepancy.

The scope of EPA's regulations is no less arbitrary with respect to the remaining phosphate industry subcategories for which the discharge of process waste water pollutants is limited or prohibited. EPA, for each, promulgated by reference the following definitions of "process waste water" and "process waste water pollutants":

"The term 'process waste water' means any water which, during manfuacturing or processing, comes into direct contact with or results from the production or use of any raw material, intermediate product, finished product, by-product or waste product."

"The term 'process waste water pollutants' means pollutants present in process waste water." (40 C.F.R. §§422.11, 422.21 and 422.31, App. 1317-18, incorporating 40 C.F.R. §401.11(q) and (r). (emphasis added).)

This definition was adopted by EPA in the abstract for $\underline{\text{all}}$ industry categories without consideration of facts relevant to $\underline{\text{any}}$

industry category. 39 Fed. Reg. 4531 (February 4, 1974). The Development Document for the phosphate industry does not provide a rationale for the application of this definition to the phosphate category and is a vague and contradictory publication as to the means of controlling or eliminating process waste water discharges as thus defined.

It is clearly evident that the phosphate industry was not evaluated with this definition as the ground rule. Rather the abstract definition was superimposed on the specific guideline regulations and is patently arbitrary in the following respects:

(1) EPA states that there are "leaks and spills in all industrial chemical operations," that "they are not going to be eliminated" and that they "can be minimized and contained." Development Document, App. 1729. EPA's analyses of control of this inevitable occurrence in the context of particular phosphate production operations is, at best, superficial and most often non-existent. For example, EPA cites the Lawrence Kansas, plant of FMC Corporation (plant No. 119 under EPA's "code system") as supporting its no-discharge regulation for sodium tripolyphosphate plants (40 C.F.R. §§422.32 and 422.33). Development Document, App. 1777. But as the information upon which EPA based that conclusion makes clear, minor leaks and spills do occur, were not considered process wastes by the plant, and are discharged. App. 524.

(2) All phosphorus and phosphate production processes involve heat and large amounts of non-contact cooling water are used and discharged. For example, the process waste water flow at a phosphorus oxychloride (POCl₃) plant as found by EPA is 600 gallons per ton of product but cooling water usage is 12,000 gallons per ton. Development Document, Table 9, App. 1712.

By definition and design, non-contact cooling water is separated from process materials. Therefore, "except for leaks, non-contact [cooling] water has no waste pickup." Development Document, App. 1728 (emphasis added). Such leaks are inevitable and the result is a high volume of effluent with extremely low levels of contaminents. EPA, by virtue of its abstract definitions and without discussion of the means, blindly and arbitrarily says that "any cooling water that picks up process related pollutants from leaks becomes process waste water." Preamble to Proposed Regulations, App. 1181.

(3) The phosphate industry is characterized by handling of finely divided solid products and, despite substantial air quality control programs, the collection of dusts on buildings and plant grounds. Development Document, App. 1731. Under EPA's definition rainwater runoff that picks up these materials could be process water. Yet, EPA states:

"The very practice of process water segregation discussed previously has led to the direct discharge of stormwater without treatment. Little is known from a quantitative standpoint about the severity of this problem in the phosphates segment of the industry, or to what extent containment and treatment of stormwater is required." (Development Document, App. 1731.) (emphasis added).)

The difficulty with the gaidelines given EPA's definition of process water is a very real one. EPA has taken waste water flows which are not related directly to the water used in production, and, by myopic evaluation of the circumstances involved, has created a major problem. No one cares to be placed in a position where a permit based on the guideline definition of process wastewater must inevitably be violated. Petitioners certainly do not; these petitions for review provide the only recourse.

II. THE 1977 AND 1983 EFFLUENT GUIDELINES FOR PHOSPHORUS PLANTS ARE INVALID

The 1977 effluent guideline for phosphorus plants based on best practicable control technology currently available (Section 304(b)(1)) in pounds of pollutant per 1000 pounds of phosphorus produced is:

	30-Day Average	Daily Maximum	
Total suspended solids (TSS) Phosphates (as Phosphorus) $\underline{1}$	0.5	1.0	
	0.15	0.3	
Fluoride	0.05	0.1	
Elemental Phosphorus	No detectable quantity		
рн	6.0 to 9.0		

40 C.F.R. §422.12, App. 1317.

Only the guideline's restrictions on phosphates and fluorides are at issue in this action. No issue is raised in this proceeding as to the prohibition on discharges of elemental phosphorus (usually called "phossy water"), the restriction on total suspended solids, or the pH limit.

Phosphates in effluent may be analyzed by analytical techniques which result in a measurement of the phosphorus ion. Use of this analytical technique does not indicate that elemental phosphorus is present in effluent.

The 1983 effluent guideline based on best available control technology currently available (Section 304(b)(2)) is "no discharge of process waste water pollutants." 40 C.F.R. §422.13, App. 1317.

A. The 1977 Effluent Guideline For Elemental Phosphorus Plants

Is Contrary To EPA's Stated Basis For The Effluent Guideline

The effluent guideline based on best practicable control technology was proposed as no discharge of process waste water pollutants. Proposed 40 C.F.R. §422.12, App. 1182. The no-discharge requirement was uniformly criticized by the Effluent Standards and Water Quality Information Advisory Committee (ESWQIAC), an independent scientific advisory committee established by Section 515 of the Act, and by petitioners as without support in the data compiled by the Agency. App. 912-13, 1246-47, 1251, 1263-64, 1269 and 1271-72. ESWQIAC recommended a specific range of allowable discharges for phosphorus plants. App. 912-13.

In the final regulations the Agency modified the effluent guideline, stating that the basis for the modification was the ESWQIAC recommendation and data on the treated effluent levels at two exemplary Monsanto Company phosphorus plants (No. 028 at Columbia, Tennessee and No. 159 at Soda Springs, Idaho). Preamble to Final Regulations, App. 1315; accord, Development Document, App. 1771-72.

In fact, the effluent guideline's restrictions on phosphates and fluorides are not consistent with the ESWQIAC report and are not met by either Monsanto plant. The effluent data on average discharges from the two exemplary Monsanto plants do appear in the Development Document,

Tables 14 and 15, App. 1738-39. Those effluent data are compared to the ESWQIAC recommendation for a range of averages (App. 912-13) and the effluent guideline promulgated by EPA in the following table. 1/All data are in pounds of pollutants per 1000 pounds of phosphorus produced.

	Effluent Guideline (30-Day Average)	ESWQIAC (Average)	Plant 028 Columbia, Tenn. (Average)	Plant 059 Soda Springs, Idaho (Average)
Fluorides	0.05	0.1 to 0.15	0.10	0.04
Phosphate (as P)	0.15	0.1 to 0.2	0.039	0.26

EPA, despite its statement that the guideline was based on the ESWQIAC report and the Monsanto plants, promulgated an effluent guideline for fluorides that is one-half of the level of fluoride discharges at the Columbia plant and one-half of the low end of the range recommended by ESWQIAC. The phosphate guideline also is contrary to the Monsanto data and the ESWQIAC recommendation. EPA seems to have either averaged the data on the two exemplary plants or averaged ESWQIAC's recommended range.

Phosphate levels for the Monsanto plants are reported as total phosphate (PO₄). By standard engineering calculations, these figures are converted to a phosphorus basis by multiplying the former by 0.326. EPA used "net" pollutant levels (i.e., the difference between effluent levels of pollutants and intake levels) for the Columbia plant because that plant discharges into the same stream from which it gets its influent water); "gross" effluent levels were used for the Soda Springs plant because its water supply is wells. Development Document, App. 1771. See pages 44-45, infra.

 $[\]frac{2}{2}$ $\frac{0.039 + 0.26}{2} = 0.1495 \text{ or } 0.15$

An effluent guideline may be applied to a particular plant on either a "net" or a "gross" basis. If applied as "gross" restrictions, a plant would be out of compliance if its discharge of pollutants, regardless of whether added during processing or present in intake water, exceeded the guideline. If applied as a "net" limitation, the plant is responsible only for pollutants which it adds to the water it uses and discharges.

Neither the phosphate industry regulations nor the preamble to those regulations explicitly state whether "net" or "gross" discharges are limited. However, the effluent guidelines regulations on their face appear to be "gross" limitations since they restrict the pollutants present in any process waste water as defined by EPA and there is no exclusion for pollutants attributable to influent or intake water.

As indicated above the 1977 effluent guideline for elemental phosphorus plants was based, according to EPA, on data from two plants, including the Monsanto Columbia plant and the effluent values used for the Columbia plant were "net" pollutant levels.

If the effluent guideline were applied in a "gross" basis the Columbia plant would not comply with any of the parameters.

^{1/} See, supra, at pages 38-41.

^{2/} Note 1, page 43, supra.

EPA, in preambles to effluent guidelines regulations for other industries, has promised to clarify its net/gross policy in generally applicable regulations by specifying that the effluent guidelines may be applied on a "net" basis if (as in the case of the Columbia plant) effluent is discharged to the same stream from which intake water is taken. E.g., Preamble to Regulations for the Inorganic Chemicals Industry, 39 Fed. Reg. 9613 (March 12, 1974). It has not done so here.

B. The 1983 Effluent Guideline Is Not Supported By The Record

The effluent guideline based on best available control technology economically achievable is "no discharge of process wastewater pollutants." 40 C.F.R. §422.13, App. 1317. The portion of the Development Document, Section X, which states EPA's rationale for the 1983 effluent guideline squarely bases the no discharge requirement on the performance of one plant:

"At Plant 181 [Hooker Chemical at Columbia, Tennessee] the lime-treated water from all sources is clarified in settling ponds, and the clarified water is held in re-use water supply ponds. There is total recycle of all water at this plant, with zero discharge. Because phosphates and fluorides are removed by lime treatment and sedimentation, there is no requirement to bleed off water for the control of dissolved solids * * *. It is therefore recommended that best available control technology economically achievable for phosphorus production be no discharge of process waste water pollutants to navigable waters." App. 1781-82 (emphasis added and

paragraphing omitted).1/

 EPA's Basis For The No Discharge Effluent Guideline For 1983 Is Deletion Of The Discussion of Climatic Conditions Which Prevent Complete Recycle

The paragraph quoted just above in which EPA states the basis for the 1983 effluent guideline is also found, without a single word changed, in its discussion of the 1977 effluent guideline in Section IX of the Development Document, App. 1770. EPA did not impose zero discharge for 1977, stating in the same Section IX of the Development Document:

"In areas of the country where very severe and extended cold water prevails, total recycle of process water becomes difficult for two reasons:

- 11. The return water piping and pumping must be protected against freezing. However, technology such as buried water mains and enclosed, heating pumping stations has been amply demonstrated in the chemical industry and in water supply operations.
- "2. The settling ponds may freeze. In a total recycle system, this circumstance would prevent the required water from being supplied back to the process. If auxiliary fresh water supply were provided to uncouple the process from frequent climatic perturba-

^{1/} EPA in a general discussion theorizes that a Tennessee Valley Authority plant at Muscle Shoals, Alabama, utilizes technology that might "enable" it to achieve no discharge. Development Document, App. 1770. That plant, however, is not cited as a basis for the 1983 effluent guideline. EPA's statements of the basis for zero discharge exclude any discussion of the TVA plant. App. 1781-82. EPA did not visit or obtain data on the plant. Its discussion of TVA apparently is based on literature. See Contractor's Report, App. 128. Commentors and ESWQIAC pointed out that the literature does not support a concept of zero discharge. App. 912, 945, 949, 953, 971. The literature (Reference number 5 in the Development Document bibliography, App. 1742) was not cited in the Development Document and was not designated for inclusion in the record.

tions, the pond system would have to consist of sufficient holding capacity to prevent temporary overflow and would have to contain sufficient evaporative capacity to prevent long-term accumulation of water." App. 1771 (emphasis added).

The effect of severe climates which EPA acknowledges in connection with the 1977 effluent guideline is very real. The point was made from the outset (App. 882): Monsanto in information provided to the contractor analyzed the potential for total recycle at the Soda Springs plant and emphasized that technology has not been developed to operate a complete recycle under "severe winter conditions" with "temperatures to 40°F below zero." App. 630. See App. 629 and 633.

The possibility mentioned in the discussion of the 1977 standard of using fresh water to "uncouple" a frozen system during the winter (i.e., add water from a source other than the frozen pond) rests, in EPA's own analysis, on (1) "sufficient holding capacity to prevent temporary pond overflow" and (2) "sufficient evaporative capacity to prevent long-term accumulation of water." App. 1771. Therefore, this possible solution does not rest on a technology that might be "available" for 1983 but not "practicable" for 1977. It rests on the physical facts of land availability for increasingly large holding ponds and a climate which results in sufficient evaporation from ponds to eliminate the excess fresh water used to uncouple frozen pond systems. The information on the Monsanto Soda Springs plant establishes that the severe climate in which it operates does not allow those conditions to be met and prevents total recycle.

In short, the 1983 no discharge requirement is not based on a reasoned analysis of the problems of plants. EPA's "analysis" was by deletion - it simply excised a substantial technical and engineering problem by the stroke of an editor's pen.

 The Record Fails To Establish That The Unidentified Technology Applied At The Exemplary Plant Is Available To Other Phosphorus Plants

The technology applied at the Hooker Columbia plant is cursorily termed "total recycle of all water at this plant" with the statement that because "phosphates and fluorides are removed by lime treatment and sedimentation, there is no requirement to bleed off water [to waste effluent] for the control of dissolved solids." App. 1781 (emphasis added). There is no other significant discussion or analysis in the Development Document of the technology for no-discharge applied at the Hooker plant or its availability to other plants.

See App. 1697-1704 (Section V-Water Use and Waste Characterization) and App. 1734-42 (Section VII-Control and Treatment Technology).

In fact, in each instance where control technology for phosphorus plants is discussed and the Hooker plant (No. 181) cited, the exemplary Monsanto plants (Nos. 028 and 159) are cited as applying the same technology (lime neutralization and sedimentation). App. 1734, 1736 and 1740.

The Development Document differentiates among techniques used by Hooker and the Monsanto plants only with respect to prevention of discharges of effluent containing elemental phosphorus ("phossy water"). App. 1743-44.

Neutralization and sedimentation will improve, but not eliminate, effluent. An EPA analysis of the means by which Hooker achieves "total recycle" is wholly lacking.

In fact, the record establishes that the Hooker plant does not have total recycle of all effluent from the process back into the process. It recycles 80 to 95 percent of its effluent. App. 404.

The two Monsanto plants also have substantial recycle. App. 617-19, 696-98, and 944-45.

Therefore, the achievement of zero discharge at the Hooker plant 2/
(other than during heavy rainfall periods) is not due to application of recycle technology. It is achieved by virtue of water losses from the "multiple pond arrangement" (App. 378) of eight separate ponds (App. 392).

EPA did not measure flows at the Hooker plant to determine the quantity of water which is lost from the pond system. App. 394-400. It did not assess whether these losses were due to evaporation or to percolation (seepage to ground water).

The Agency did not consider whether precipitation rates at $\frac{3}{}$ plants located in humid southern areas would result in sufficient

Lime treatment will not remove chlorides. App. 944. On total recycle of all waters, chloride concentrations should increase to their limits of solubility. The data on the Hooker plant show chlorides are being concentrated from 3 ppm to 400 ppm (App. 397, 398, 399) indicating a high degree of recycle, but not total recycle since the limits of solubility of chlorides is greater than 40,000 ppm.

^{2/} See, <u>infra</u>, pages 50-52.

^{3/} Phosphorus plants are located in Idaho, Montana, Florida, Tennessee, and Alabama. Economic Analysis, App. 1207.

evaporation to permit zero discharge to be achieved. EPA did not determine whether land space, a critical factor in Hooker's ability to apply multiple pond technology (App. 411), is available "technology" for even a significant segment of the industry.

Ultimately, the Agency's conclusion comes down to a single unexplained and unsupported assertion: "the effluent from technology 'A' [the level achieved by Monsanto at Columbia] is suitable for process reuse * * *." App. 1757. This is not fulfillment of its obligation to consider the engineering aspects of application of technology chosen as best available technology. Section 304(b)(2)(B).

C. EPA Has Arbitrarily Refused To Allow For Discharges
Attributable To Rainfall

It is a rather obvious fact that precipitation and evaporation rates vary in different regions. EPA for other industry categories, inorganic chemicals for example, included provisions which make allowances for discharges due to "catastrophic rainfalls" (once in 10 year or 25 year 24 hour rainfall events) and for the excess of precipitation over evaporation where control technology includes settling ponds.

^{1/} The 1977 effluent guideline for aluminum sulfate (alum) provides:

⁽b) A process waste water impoundment which is designed, constructed and operated so as to contain the precipitation from the 10 year, 24 hour rainfall event * * * may discharge that volume of process waste water which is equivalent to the volume of precipitation that falls within the impoundment in excess of that attributable to the 10 year, 24 hour rainfall event, when such event occurs.

(c) During any calendar month there may be discharged from a process waste water impoundment * * * [subject to specified limits on pollutant concentration] a volume of

EPA failed to include such a provision for the phosphorous industry, which employs large settling ponds. Its failure to do so at least for catastrophic rains is incredible since it concludes in its discussion of the exemplary Hooker plant:

"Under conditions of abnormally high rainfall which would exceed the capacity of the pond system, the only overflow would be from the final re-use water supply ponds, thereby minimizing the quantities of pollutants even occasionally discharged." (Development Document, App. 1781).

That is hardly zero discharge.

EPA's assertion that lesser rains can be contained without discharge because the Hooker system runs at a "water deficit" (Development Document, App. 1781) must be rejected out of hand. EPA did not even measure flows at the Hooker plant to determine what amount of rainwater, if any, can be consumed in the process by virtue of the asserted fact that more water is used in the process than is discharged. App. 394-400. Hooker flatly refuted EPA's speculation from the first visit of EPA's contractor, with an offer to EPA to provide whatever additional information the Agency might desire to verify the fact that excess rainfall is discharged. App. 408 and 1271.

The failure to allow for rainfall is as arbitrary for the finite 1977 effluent guideline as for the no-discharge 1983 effluent

^{1/} Continued from page

process waste water equal to the difference between the precipitation for that month that falls within the impoundment and the evaporation for that month * * *."

(40 C.F.R. §415.22(b) and (c), 39 Fed. Reg. 9619 (March 12, 1974).

guideline. Discharges of excess precipitation over evaporation will increase flows and hence pounds of pollutants discharged.

D. EPA's Cost Estimates Are Patently Inadequate

plants at \$500,000. App. 1755. It is clear from the Development Document that the cost covers only the "plumbing" needed to return water from the settling ponds to the production facilities. App. 1757. EPA states that the cost does not include measures to deal with "severe freezing problems" which it concedes as major obstacles to recycle (App. 1757) and it is evident that recycle of rainwater is not accounted for by EPA.

Commentors provided EPA with estimates showing that EPA's figures were low by almost a factor of five. App. 1361 and 1368.

ESWQIAC pointed out that the cost estimate was based on a simplistic conception of recycle technology and was without "breakdown, justification or defense." App. 913.

The Draft Economic Analysis prepared by an outside contractor was premised on EPA's cost figures (which the contractor suspected were low). App. 1243. The contractor found it difficult to assess the impact of abatement costs in the industry. App. 1213. The Agency appears to have entirely defaulted in assessing cost as required by Section 304(b)(2)(B) since it never responded to criticisms of its original estimates and in determining economic achievability (Sections 301(b)(2) and 304(b)(2)) since it never prepared a final Economic Analysis.

III. THE 1983 EFFLUENT GUIDELINE FOR PHOSPHORUS TRICHLORIDE AND PHOSPHORUS OXYCHLORIDE IS INVALID

Phosphorus trichloride (PCL₃) and phosphorus oxychloride (POCl₃) are in Subpart B (Phosphorus Consuming Subcategory) of the regulations. The effluent guideline based on best available technology economically achievable (Section 304(b)(2)) is "no discharge of process waste water pollutants." 40 C.F.R. §422.23, App. 1318. There are no exceptions.

A. There Is No Basis In The Record For The Agency's Conclusion That The Technology Is Available To Achieve No Discharge Of Process Waste Water

The principal source of waste water in a phosphorus trichloride or phosphorus oxychloride plant is effluent from "tail gas" scrubbing of PCl₃ or POCl₃ vapors from the reaction and distillation vessels (PCl₃ and POCl₃ are very volatile and vaporize at low temperatures). There are also effluents from scrubbing vapors from product storage tanks and product transfer operations and from cleaning of tank cars and returnable product shipping containers. Development Document, App. 1707-11; App. 309, 474. The standard process water flow found by the Agency for phosphorus trichloride plants was 1200 gallons per ton of product; and for phosphorus oxychloride plants, 600 gallons per ton of product. Development Document, Table 10, App. 1712.

EPA hypothesized two schemes for achieving no discharge of process waste water pollutants. The heart of the first theory is to reduce waste water flow by 90 percent by installing refrigerated

condensers in addition to water cooled condensers presently used.

The remaining 10 percent of the effluent, according to EPA, can be evaporated. Development Document, App. 1782-83.

EPA concedes that a "rigorcus economic evaluation" might force phosphorus trichloride and oxychloride producers to another approach. Development Document, App. 1784. Therefore, it predicted that no attempt to reduce wastewater flow by 90 percent would be made and instead, that the entire waste flow would be evaporated. Development Document App., 1784.

1. No Plant Has Achieved Or Contemplates Achievement
Of Zero Discharge

EPA visited two phosphorus trichloride and oxychloride plants:

Hooker at Niagara Falls, New York (No. 147) and FMC Corporation at

Nitro, West Virginia (No. 037). Nothing in the record on these

plants even relates to achievement of zero discharge.

in its phosphorus oxychloride unit. Development Document, App: 1782. The basis for the Agency's description of the FMC plant is not clear; nowhere in the information in the record on the FMC plant is FMC use of refrigerated condensers mentioned much less described. See App. 474-86.

However, even assuming that the plant, in fact, does employ refrigerated condensers, the Agency's implication that this provides

In fact, so convinced was EPA that economics would dictate against use of refrigerated condensers, it did not even estimate their cost. Development Document, App. 1757.

leading. Whatever its basis, EPA's own description of the FMC process, which is not the standard POCl₃ process, makes it absolutely clear that refrigerated condensers are not abatement technology in the phosphorus oxychloride process and not used at all in the phosphorus trichloride unit at the FMC plant. Development Document, App. 1681.

In fact, the data cited by the Agency for the FMC plant plainly indicate that refrigerated condensers are not an attractive technology for achieving the 90 percent flow reduction postulated by EPA. The flow rate from the wet scrubbers employed at the Hooker plant is given by EPA as 600 gallons per ton of POCl₃ produced. Development Document, App. 1708. The flow given for effluent from scrubbing after refrigerated condensation at FMC is 430 gallons per ton of POCl₃ produced, (Development Document, App. 1710), or, at the

In the FMC process, according to EPA, phosphorus oxychloride is produced by oxidation of phosphorus trichloride with dried air. The "significant difference" between the standard and the air-oxidation process is that non-condensible gases (nitrogen and excess oxygen) are involved. App. 1681. The amount of POCl₃ vapor lost through the condensers is a function of both the vapor pressure of POCl₃ and the amount of inert gas available to carry the vapor through to the vent gas scrubber. In the case of the production of POCl₃ by the use of air, the amount of nitrogen present will be high, necessitating the use of refrigerated condensers to keep the percent of POCl₃ vapor in the large mass of inert gas small and POCl₃ losses low. As indicated by EPA's diagram for the FMC process, wet scrubbers are employed, as in the standard process, to reduce emissions of tail gas from the refrigerated condenser. Development Document, Figure 9, App. 1683 and 1710.

^{2/} This is the total flow from all POCl₃ produced. Effluent flow for just the scrubbers is not separately given.

maximum, less than a 30 percent reduction as compared to the flow at the Hooker plant. .. 30 percent reduction is a far cry from the 90 percent postulated by EPA.

 EPA Did Not Analyze The Engineering Aspects Of In-Plant Controls And Evaporation

EPA's analysis of the application of evaporation and refrigerated condenser technology, for which it had no data from actual application, to the phosphorus trichloride and oxychloride industry is simplistic verging on nonexistence. EPA's description of the technology contemplated for evaporation is the phrase "single-effect evaporation." Development Document, App. 1783. Its analysis of the availability of evaporation consists of the following statement:

"Evaporation is a technology, of course, that is aptly demonstrated throughout the chemicals process industry (although not extensively for the sole purpose of waste treatement), and as such meets the requirements of being currently available." Development Document, App. 1750 (emphasis added).

The implication the evaporation is a straight-forward, single technology that is routinely applied, with only a low-key paranthetical qualification, is more than misleading. It is dead wrong and flatly contradicted by the Agency's own concessions in the Development Document for the Major Inorganics Products Segment of the Inorganic Chemicals Manufacturing Point Source Category, EPA-440/1-74-007-a (March 1974) [hereinafter "Inorganic Chemicals Development Document"].

The Inorganic Chemicals Development Document contains a statement on the availability of evaporation technology similar to that in the phosphate document:

"The evaporation process is well known and well established in the inorganic chemical industry." Inorganic Chemicals Development Document, at 225.

However, in the same discussion (after running quickly over process uses of evaporation and desalination of seawater without a single citation or reference to a specific application), the Agency corrects its sweeping and inaccurate statement:

"Evaporation is a relatively expensive operation.
To evaporate on kg of water, approximately 550 kg-calories of energy is required and the capital cost for the evaporation equipment is not low. For these reasons industrial use of evaporation in treating wastewater has been minimal." Inorganic Chemicals Development Document, at 255 (emphasis added). 1

EPA's failure to qualify its bold and inaccurate statement on evaporation in the phosphate industry Development Document as it did in that for inorganics chemicals is inexcusable. That omission is particularly disturbing and inexplicable since the same contractor (General Technologies) was retained by EPA for the two industries.

It is also abundantly clear from the inorganic chemical EPA publication that "evaporation" is not even in theory a single technology. It is not simply a matter of putting pots of effluent over a burner.

Also, it concedes elsewhere that the two "high energy technologies," evaporation and drying, "are now rarely used." Inorganic Chemicals Development Document, at 229.

The Agency simply has provided no basis for a conclusion that the evaporative technology, whatever it may be, is "available."

It has not considered the problem of fouling of equipment which has plagued even experiments in partial evaporation for purposes of desalination. It ignored the massive design problems arising from the fact that typical effluents from PCl₃ and POCl₃ production are very dilute even compared to sea water. There are no pilot studies, no citations to evaporation in other industries, no discussion of possible technology transfer and not even citations to supporting literature.

The record is even more sparse with respect to refrigerated condensers. EPA's "analysis" of the availability of the technology consists of conclusory statements that they are "standard items" and that in practice "the existing condensers" may be used. Development Document, App. 1760.

There is nothing, not even a literature citation, supporting the contention that refrigerated condensers for use in effluent abatement are "standard" for PCl₃ plants, for POCl₃ plants using the standard process or POCl₃ plants (such as FMC) using the non-standard air-oxidation process (see page 55, note 1, supra). As to use of "existing condensers", only the FMC plant (according to EPA) uses a refrigerated condenser and construing the data under assumptions most favorable to EPA, the FMC plant does not even come close to the 90 percent reduction in flow which EPA contemplates.

There is an additional deficiency in EPA's analysis. Refrigerated condensers, by lowering the temperature of the product PCl₃ or POCl₃, only reduce the amount of PCl₃ and POCl₃ vapor potentially lost to the atmosphere unless scrubbed. Development Document App.

EPA, somehow, must make the leap from the asserted (without 1/support) 90 percent reduction in vapor emissions to a 90 percent reduction in effluent flow from the scrubber. EPA tries to bridge this gap with the completely conclusory statement: "Tail-gas scrubbers should be very much smaller and should require much lower water flow rates." Development Document, App. 1783. It is an elementary fact about wet scrubbers that flow rates are not contingent solely upon pounds of pollutants to be removed. Concentrations of PCl₃ and POCl₃ vapors, gas-flow rates and other factors would be critical to a determination of what, if any, effluent flow reduction could be achieved by addition of refrigerated condensers. EPA completely sluffed over this central point.

EPA's analysis of the quantitative reduction in PCl₃ and POCl₃ vapor losses consists of stating that they would be "drastically reduced[d]," and reduced by an "order-of-magnitude or greater," such that a "reasonable expectation is that the PCl₃ vapor (and mist) losses could be cut to 10 percent of present values." Development Document, App. 1750 and 1782. There is nothing in the record or even a meaningful technical analysis to support EPA's bare conclusions on vapor losses.

^{2/} EPA's off-hand suggestion, which it abandons in later discussions, that refrigerated condensers might be substituted for scrubbers (Development Document, App. 1782) would depend not only on the efficiency of the condensers, which EPA inadequately dealt with, but on whether an acceptable (occupational safety and health and air regulations) emission rate could be attained, an area which EPA did not explore at all.

- B. EPA Has Failed To Consider Energy And Non-Water Quality Environmental Impact
 - 1. EPA's Estimates Of Energy Consumption Are Understated And Deceptive

The Congress made it exceptionally clear that energy use in water pollution abatement was a factor to be taken with dead seriousness by the Agency. E.g., 118 Cong. Rec. H9131-32 (daily ed. Oct. 4, 1972), Legislative History, at 269.

The Congress' foresight in ordering EPA to "consider the full impact of the energy crisis facing the United States" (118 Cong. Rec. H9131 (daily ed. Oct. 4, 1972). Legislative History at 269) has been demonstrated by the events of the last year. The Agency's insensitivity to the Congressional mandate is demonstrated by the effluent guidelines for the phosphorus trichloride and oxychloride industries.

The Agency recognized, as it had to, the high energy consumption of evaporation and refrigerated condensers. Development Document, App. 1750, 1760 and 1766. EPA's sole grudging nod to energy consumption is to note that a single effect evaporator (which it sets forth as the technology model) consumes 1000 BTU per pound of water evaporated and that the energy requirements of the effluent guidelines would be 293 kilowatt hours per 1000 kilograms of phosphorus trichloride produced and 146 kilowatt hours per 1000 kilograms of phosphorus oxychloride produced. Development Document, App. 1765 and 1767.

EPA has not provided any analysis of the design criteria or other information which supports its estimate of energy consumption. However, apart from that fatal defect, its estimate of electricity to be consumed "for the proposed treatment technologies" (Development Document, App. 1766) merits close consideration.

EPA has proposed either a 90 percent reduction in effluent flow by use of refrigerated condensers and evaporation of the remaining effluent or evaporation of the entire flow. EPA acknowledged that the "power requirement for a refrigeration condenser would be moderately high." Development Document, App. 1760. Yet, EPA's estimate of electricity consumption is based on evaporation of 10 percent of the flow found by EPA with no allowance for energy consumed by the refrigerated condenser. EPA's failure to indicate in any way that its estimate was partial is deceptive and verging on intellectual dishonesty.

Even EPA's figures demonstrate the major role which energy considerations should have taken, but did not, in the rulemaking process. By standard engineering calculations (and not even factoring energy requirements up to account for boiler inefficiencies), 6.95 million kilowatt hours per year required for a 65 ton/day PCl₃ plant would be equivalent to 237 million standard cubic feet of gas or 165,900 gallons of oil. For coal, it would be 880 tons. For a

The standard engineering calculations establishing this point are given in Appendix E.

50 ton/day POCl₃ plant, the 2.66 million kilowatt hours per year derived from EPA's figures would be equivalent to 63,910 gallons of fuel oil, 91.3 million standard cubic feet of gas, or 338 tons of coal.

This is only <u>one-tenth</u> of the fuel required to evaporate the entire effluent by the alternative technology proposed by EPA.

While EPA failed inexplicably to estimate energy for refrigerated condensers (if technologically feasible), the energy use likely would increase EPA's partial evaporation requirements by a factor of four or five.

EPA's refusal to grapple with energy extended beyond deceptive estimates:

"It was stated that the evaporation of PC13 and POC13 process waste waters would require an excessive amount of energy.

"The 1983 limitations for the manufacture of PC13 and POC13 are no discharge of process waste water pollutants which can be accomplished by maximum waste water recycle and evaporation of the blowdown. The Agency believes that sufficient time exists for each plant to be examined by the industry in order to minimize water usage, maximize solar evaporation and thus minimize power usage."

Preamble to Final Regulations, App. 1315.

In addition to being unable to describe correctly its technology model, the Agency declined, for good reason, to deny that energy requirements were not justified. Instead, it engaged in pipe dreams about solar evaporation.

2. EPA's Estimate Of Costs Is Incomplete And Inadequate

through use of refrigerated condensers. Therefore, since cost is a mandatory consideration under Section 304(b), EPA has not fulfilled its statutory obligation and that technological model cannot support EPA's regulation.

Its cost estimates for total evaporation are unexplained, unsupported and contradictory. For example, in one instance, EPA states that the cost of total evaporation would \$7.35 per ton (Development Document, App. 1784); in another \$1.40 for PCl₃ plants and \$1.25 for POCl₃ plants (Development Document, App. 1755).

Since EPA did not include its cost calculations, it is unclear whether it used its deceptively partial energy estimates. Equally disturbing, and incredible, is the fact that EPA included the June, 1973, operating and maintenance cost (which is in large part energy) of its contractor even though energy costs have doubled and, in some cases, tripled since then. Compare Development Document, App. 1783-84 with Contractor's Report, App. 146-47.

3. The Benefits To Be Achieved Are Wholly Out Of Proportion
To Cost, Energy and Non-Water Quality Environmental Debits

The effluent consequences of zero discharge can be approximated by calculating allowable average daily discharges under the 1977 effluent guideline, which is not being challenged, for a combined 65

^{1/} It "assumed that refrigerated condensers proved less economical than larger evaporators." Development Document, App. 1757.

^{2/} Dollars per metric ton (1000 kilograms) are converted to dollars per English ton by multiplying the former by .907. Development Document, App. 1800.

ton per day PCl₃ and 50 ton per day PCl₃ plant. Such a plant would be permitted only 106 pounds per day of suspended solids (less than six standard bucketfuls as compacted dry material), 121 pounds of phosphates (analyzed as phosphorus) and .0065 pounds per day arsenic (or 23 pounds per year).

The cost of achieving the minimal reduction from these levels to zero discharge is out of proportion to any conceivable benefit. Using EPA's \$7.35 per ton cost figure (Development Document, App. 1784), the annual cost would be over three million dollars or \$2.50 for each pound of total suspended solids, phosphates, and arsenic removed.

The result of this excessive cost and wastage of energy would be the creation of a solid waste problem. The Congress purposely wrote into the 1972 Act the sensible principle that it would be "foolhardy to credit one environmental account and debit another by the same action". 118 Cong. Rec. H9117 (daily ed. Oct. 4, 1972), Legislative History, at 232. Yet, this is precisely what EPA has done.

Using EPA's electricity estimates scaled up to total evaporation and without increasing energy needs to account for inefficiencies, 12,180 tons of coal would be required annually to evaporate the effluent from the hypothetical 65 daily ton PCl₃ and 50 daily ton POCl₃ plant. If the coal were 3.5 percent sulfur and 8 percent ash content, 1.7 million pounds of sulfur oxides would be emitted and nearly 975 tons of ash would either be emitted or disposed of as solid waste after precipitation. The pollutants removed from effluent would be transformed into a solid, largely soluble landfill problem.

IV. THE 1977 AND 1983 EFFLUENT GUIDELINES FOR PHOSPHORUS PENTASULFIDE PLANTS ARE INVALID

Both the effluent guideline based on best practicable control technology currently available (1977) and the effluent guideline based on best available technology economically achievable (1983) require that "there shall be no discharge of process waste water pollutants. from the manufacture of phosphorus pentasulfide." 40 C.F.R. §§422.22, 422.23, App. 1317-18.

Molten phosphorus pentasulfide (P_2S_5) ignites on contact with air and generates a complex mixture of phosphorus pentoxide (P_2O_5) and sulfur dioxide (SO_2) fumes. Development Document, App. 1677. Consequently, wet scrubbers are used to reduce fume emissions during the processing ("casting") of P_2S_5 from a molten liquid to a solid. The effluent (or "scrubber liquor") from the scrubber (given by EPA as 7,200 gallons per ton of P_2S_5 produced) is a major effluent source at a phosphorus pentasulfide plant. Development Document, App. 1677 and 1707.

EPA proposed two options for eliminating this effluent to achieve zero discharge. One technology, according to EPA, would be to substitute inert atmosphere casting or vacuum casting for the wet scrubbing of the fumes from the casting of liquid phosphorus pentasulfide. Development Document, App. 1774. This would, according to EPA, eliminate contact between the molten P₂S₅ and air and, hence, fumes to be scrubbed.

As an alternate, EPA recommends achievement of zero discharge by (1) using dilute caustic or lime slurry to reduce the volume of waste water, (2) partial recycle of scrubber liquor, (3) lime treatment and sedimentation followed by (4) total recycle of the treated waste to process. Development Document, App. 1774. It is with the fourth step of the alternative technology for phosphorus pentasulfide plants that Petitioners take issue.

A. EPA's Hypothesized Technology Has Not Been Demonstrated Or Considered In The Industry.

EPA did not, and could not, cite any existing plant in support of its zero discharge guideline. EPA compiled data on two phosphorus pentasulfide plants (Hooker's Niagara Falls, New York and Columbus, Mississippi plants). Neither achieves zero discharge by recycle, by vacuum or inert atmosphere casting, or by any other means. App. 440, 313. Hooker's Columbus, Mississippi plant, at the time it was visited by EPA's contractor, was installing a new scrubber system and expressed the hope that it could reduce effluent to 3600 gallons per day of discharged process waste water through partial recycle. App. 440. Neither total recycle nor vacuum or inert casting was discussed by the contractor or EPA with or in connection with these plants.

B. Inert Atmosphere Or Vacuum Casting Is Not An Available Or Legally Acceptable Basis For The Zero Discharge Requirement

The Congress plainly stated that the 1977 effluent guideline must be based on end-of-the-pipe control technologies and cannot be

bottomed on in-process changes. H.R. Rep. No. 92-911, 92d Cong.,
2d Sess., at 101 and 102-03 (1972), Legislative History, at 788 and
789-90. A radical revision of a production facility is completely
outside the range of technological options which EPA may consider as
a basis for best practicable control technology to be achieved by
1977.

EPA can look to in-process changes in assessing best available technology for the 1983 effluent guideline. However, there must be a sound basis for concluding that the technology is available and demonstrated.

EPA has provided no such basis. There is no evidence in the record or citations to literature to support the assertion that there "are various state-of-the-art techniques available for casting either an inert atmosphere or in a vacuum". Development Document, 1751.

Even EPA recognized the magnitude of its proposal:

"This is a relatively expensive control technique, requiring major revisions not only of the casting equipment by also of the basic casting procedures. The annual cost of the inert gas (assuming it is not recycled) must be estimated. Development Document, App 1760 (emphasis added).

Further, the fact that EPA could only estimate the cost underscores the fact that the technology is a result of speculation or imagination and is in no way related to an existing, demonstrated, or available technology.

Finally, EPA's speculation on inert atmosphere or vacuum casting rests explicitly on the premise that "the sole source of process waste water is the scrubber liquor for fumes from casting liquid P_S_." Development Document, App. 1774. EPA's own description of the process noted that effluents may result from scrubbing of dusts and fames from crushing and product purification operations. Development Document, App. 1677. Commentors also pointed out additional sources of effluent, including the off gas from the reactor vessel and the phosphorus pentasulfide milling and packaging operations and the waste water which results from the cleaning of containers. App. 309, 946. In short, EPA's recommended technology deals with only one of several process waste water streams found in such plants.

C. Total Recycle Technology Is Not Available Or Demonstrated

The move from partial to total recycle, particularly to air emission control equipment, is a huge technological leap. This leap has not been made in the phosphorus pentasulfide industry.

This point was clearly made by industry commenters. App. 946. In addition, the obstacles to recycle were made and explained to EPA by Arthur D. Little, Inc., EPA's own Contractor for the Draft Economic Analysis:

> "Total recycle probably cannot be carried out or approached in present equipment: The sulfatesulfite-lime system, once concentrations build up, requires special scrubbing and fluid handling techniques to keep severe scaling under reasonable control. The problem in lime scrubbing of flue gas illustrates this point." App. 1592 (emphasis added).

A.D. Little was simply stating the established chemical engineering problem with recycle systems: concentrations of dissolved impurities gradually build up every trip the water takes through the recycle loop until they result in plugging or scaling of the transfer lines or of the air pollution control equipment itself or ineffective operation of the air emission abatement equipment. The only remedy is to "bleed off" part of the scrubbing liquor and replace it with fresh water. The problem would be particularly acute for P₂S₅ plants. In addition to the sulfites and sulfates which would build up rather quickly because of sulfur dioxide in the fumes, the trace quantity of phosphate compounds emitted and entrained in the scrubber liquor (App. 1707) would accelerate scaling problems in the recycle loop. A no-discharge guideline promulgated without even discussion of these basic engineering problems cannot be sustained.

V. THE 1977 AND 1983 EFFLUENT GUIDELINES FOR SODIUM TRIPOLYPHOSPHATE ARE INVALID

AS APPLIED TO PLANTS PRODUCING
FOOD GRADE SODIUM TRIPOLYPHOSPHATE

Both the effluent guideline based on best practicable control technology currently available (1977) and the effluent guideline based on best available technology economically achievable (1983) require that "there shall be no discharge of process waste water pollutants . . .from the manufacture of sodium tripolyphosphate [commonly referred to as "STPP"] . . . " 40 C.F.R. §422.32, App. 1318; 40 C.F.R. §422.33, App. 1319.

A. Food Grade Sodium Tripolyphosphate Is A Distinct Product, The Quality Of Which Is Strictly Regulated

Most of the STPP manufactured in the United States is used in household laundry formulations. App. 1227. This is commonly known as technical or detergent grade STPP. STPP is also manufactured in the United States for human consumption as a food additive. Unlike its technical or detergent grade counterpart, food grade STPP is subject to stringent quality control by the Food and Drug Administration (FDA).

21 C.F.R. §121.3(d) (1974) provides that "any substance used in food must be of food-grade quality. The Commissioner [of FDA] regards the applicable specifications in the current edition of 'Food Chemicals Codex' as establishing food grade unless he has by Federal Register promulgation established other specifications". Since the Commissioner has not established "other specifications" for food grade STPP, the "Food Chemicals Codex", a publication of the National Academy of Science's National Research Council, states the applicable legal requirements:

"Assay. Not less than 85.0 percent of Na₅P₃O₁O. Loss on drying. Not more than 0.7 percent.

Limits of Impurities
Arsenic (as As). Not more than 3 parts per million (0.0003 percent).

Fluoride. Not more than 50 parts per million (0.005 percent).

Heavy metals (as Pb). Not more than 10 parts per million (0.001 percent).

Insoluble substances. Not more than 0.1 percent.

Lead. Not more than 5 parts per million

(0.0005 percent)."

B. The Record Is Totally Devoid Of Evidence Supporting A Conclusion That Technology Is Available To Achieve Zero Discharge From A Food Grade STPP Plant

Other than the mere listing of the selling price per ton of food grade STPP (Development Document; App. 1662) there is not a single reference by EPA in the record to the fact that food grade vis-a-vis technical grade STPP even exists. There is no discussion or evidence of consideration of the distinct and serious problems faced by plants which produce food grade STPP.

The technology spelled out by EPA to enable STPP plants to achieve no discharge of process waste water consists of (1) substitution of dry dust collection for wet dust collection and (2) total recycle of contaminated waste to process. See Development Document, App. 1713, 1752, 1754-55, 1757-58, 1777. In fact, of the three plants cited by EPA as exemplifying its no-discharge-via-total-recycle guideline, only one plant manufactures STPP for sale as a human food additive--Monsanto's Trenton, Michigan plant (No. 006). Contractor's Report, App. 72; Draft Development Document, App. 1088,

National Research Council, Food Chemicals Ccdex, 780 (2d ed. 1972) (cited portions attached as Appendix F).

The other two exemplary STPP plants are Hooker Chemicals' Jeffersonville, Indiana plant (No. 042) and FMC's Lawrence, Kansas plant (No. 119). Contractor's Report, App. 72, 139; Draft Development Document, App. 1088, 1125, 1152; Development Document, App. 1713, 1752, 1777.

1125, 1152; Development Document, App. 1713, 1777.

In comments on the Contractor's Report (App. 942, 957, 1320) and again in comments on the Proposed Regulations (App. 1290, 1295) Monsanto repeatedly pointed out in no uncertain terms that its Trenton, Michigan plant did not achieve no discharge of process waste water. The data on the Trenton, Michigan plant submitted to the Contractor in connection with the Contractor's April 5, 1973, plant visit clearly confirm Monsanto on this point: Trenton, Michigan does not achieve no discharge of process waste water. App. 517-518.

The Contractor's trip report on the Trenton, Michigan plant visit even provided EPA with the reason for Trenton, Michigan's failure to achieve zero discharge. The report passed on to EPA Monsanto's crucial observation that "[f]ood grade . . . phosphate salts plant cannot, using available technology, achieve total

I/ EPA itself seems, belatedly, to have realized its error in originally characterizing Trenton, Michigan as a zero discharge plant since one specific reference to Trenton, Michigan as a "no process wastewater" plant in the Draft Development Document (App. 1125, citing three STPP plants, including Trenton, Michigan as having achieved zero discharge) was deleted from the Development Document (App. 1752, citing only two STPP plants, not including Trenton, Michigan, as having achieved zero discharge). Inconsistently, the Development Document still erroneously refers to Trenton, Michigan as a zero discharge STPP plant in two other places. App. 1713; App. 1777.

recycle." App. 762. The problem pointed out is a simple one, requiring no specialized technological background to understand. When Food and Drug Administration (FDA) food grade specifications have to be maintained, only water of sufficient purity to enable the finished product to conform to those specifications can be recycled to process. This precludes total recycle of wastewater to process (the means for achieving "no discharge").

In comments on both the Contractor's Report and on the Proposed Regulations themselves, EPA was told that food grade vis-a-vis technical grade STPP plants could not achieve no discharge of process waste water (App. 1265-66, 1293, 1290, 1362, 942, 1320, 1328, 1297, 950, 957) because food grade operations/specifications are incompatible with total recycle (App. 1295, 1592); that this problem is even further aggravated in multi-product plant complexes (the rule in the phosphate manufacturing industry rather than the exception) because of the additional danger of cross-product contamination (App. 942, 950, 952, 957, 959, 969-70, 974-77, 1265-66, 1290, 1293, 1295, 1297, 1362-3, 1/1320, 1328); and, hence, food grade STPP manufacture should be excluded from the no discharge guidelines pending further study (App. 1363, 1330, 959, 952). It is unfortunate that EPA completely

[&]quot;Imagine the technical nightmare of trying to recycle the <u>right</u> material to the right process when the same plant produces several different products simultaneously, and at different times, and uses a multitude of raw materials showing up in the effluent stream." App. 950, 957, 1328.

ignored the many attempts of food grade STPP manufacturers to get the point across to EPA that maintenance of food grade purity requirements was incompatible with total recycle technology.

EPA itself recognized in a limited way the impediment which food grade specifications place on recycle. The Development Document's discussion of what to do with contaminated stormwater runoff (a problem in all phosphate plants because the exterior surfaces of buildings, equipment, and grounds may be covered with dusts (App. 1731)) states: "Where possible, the solids [collected from the stormwater runoff] may be returned to appropriate process streams. Where purity requirements prohibit this return, adequate means for safe disposal of solid wastes must be provided." Development Document, App. 1731 (emphasis added).

Wholly and inexplicably inconsistent with its treatment of food grade STPP, particularly with regard to the 1977 guideline, is EPA's treatment of the only other food grade product in the phosphate subcategory—calcium phosphate. As discussed below, EPA recognized from the outset the difference between food grade and non-food grade calcium phosphate and dealt with the two separately. The proposed regulation (App. 1183) set forth "no discharge of process waste water" 1977 and 1983 guidelines for food grade calcium phosphate manufacture.

^{1/} Page 78, infra.

Comments were made with respect to the "no discharge" guidelines for food grade calcium phosphate which were very similar to those made regarding food grade STPP, and often in the same submission. See, e.g., App. 950, 952, 957, 959, 1592, 1288, 1293, 1297, 1363. Although EPA, without support in the record, remained adamant on the 1983 "no discharge" guideline for food grade calcium phosphate, it modified the 1977 guideline for food grade calcium phosphate in response to comments on the incompatibility of total recycle with the maintenance of food grade specifications (App. 1314) while not even acknowledging comments of the same nature on food grade STPP. This is all the more puzzling in light of the fact that certain food grade specifications sanctioned by the FDA are actually more stringent for STPP than for calcium phosphate.

C. The Cost And Economic Impact Of Pollution Control Was Not Considered For Food Grade STPP Manufacture

The zero-dollars estimated cost of achieving no discharge of process waste water for STPP plants in the Contractor's Report was quite specifically based only on the manufacture of technical grade STPP. App. 212. This estimated cost was transferred, without change, to the Draft Development Document (App. 1129) and the Development Document (App. 1755).

Compare National Research Council, Food Chemicals Codex, 780-83 (STPP) (2d ed. 1972) with id., at 146-51 (calcium phosphate) (cited portions attached as Appendix F). See pages 70-71, supra; 77-78, infra.

The contractor which prepared the Draft Economic Analysis based its conclusion that there would be no significant economic impact caused by STPP producers having to achieve no discharge of process wastes on that same cost information (App. 1236, 1243-44) with the caveat that "[i]f actual costs are significantly higher than indicated in the effluent guideline development document, as a number of producers believe to be the case, significant economic impacts may be felt".

App. 1198 (emphasis added).

Even assuming, arguendo, the accuracy of the zero-cost estimates cited in the Contractor's Report, the Draft Development Document, and the Development Document and underlying the conclusions of the Draft Economic Analysis as to technical grade STPP, the fact remains there is no pollution control cost data or economic impact analysis whatsoever in the record which relates to the manufacture of food grade STPP. Since under Section 304(b)(1)(B) of the Federal Water Pollution Control Act, a full cost-benefit analysis is a mandatory consideration in determining best, practicable control technology currently available (1977) and since under Section 304(b) (2)(B) cost is also a mandatory consideration in determining the best available technology economically achievable (1983), to allow the 1977 and 1983 no discharge guidelines EPA has promulgated for STPP production to be applied to the manufacture of food grade STPP would be to countenance a clear violation of the Act itself.

VI. THE 1983 EFFLUENT GUIDELINE FOR FOOD GRADE CALCIUM PHOSPHATE IS INVALID

The effluent guideline based on best available technology economically achievable (1983) requires that: "[T]here shall be no discharge to navigable waters of process waste water pollutants resulting from the manufacture of . . . human food grade calcium phosphate." 40 C.F.R. §422.33, App. 1319.

A. Food Grade Calcium Phosphate Is A Distinct Product, The Quality Of Which Is Strictly Regulated

One use for nonfertilizer calcium phosphate manufactured in the United states is as an animal feed supplement. App. 1228, 1689.

This is commonly known as feed grade calcium phosphate.

A much purer and more expensive grade of calcium phosphate, however, is also manufactured in the United States for use as a dentifrice and for human consumption. App. 1229, 1234, 1662. This is commonly known as food grade (mono-, di-, or tri-) calcium phosphate and is subject to the very stringent purity requirements of the FDA.

21 C.F.R. §121.3(d). The applicable food grade specifications for calcium phosphate impose the following limits on impurities:

Arsenic (as As). Not more than 3 parts per million (0.003 percent). Fluoride. Not more than 25 parts per million (0.0025 percent) for monocalcium phosphate and 50 parts per million (0.005 percent) for dicalcium and tricalcium phosphates.

See, supra, page 70. As in the case of STPP, the Commissioner of FDA has not promulgated specific standards for calcium phosphate. Thus the Food Chemicals Codex specifications are controlling.

Heavy metals (as Pb). Not more than 30 parts per million (00.003 percent). Lead. Not more than 5 parts per million (0.0005 percent). $\frac{1}{2}$

These Federally required food grade purity requirements, which in essence set forth a <u>definition</u> of food grade calcium phosphate which United States manufacturers must adhere to, add a unique dimension to the effluent pollution control problems of food grade vis a vis non-food grade (animal feed grade) calcium phosphate plants. EPA itself recognized this from the outset, to some extent, at least, by dealing with food grade calcuin phosphate separately from its animal feed grade counterpart. See, e.g., Contractor's Report, App. 137-39, 143; Draft Development Document, App. 1152-54, 1157; Economic Analysis, App. 1229-34, 1239-40; Development Document, 1777-78, 1781, 1784-5; Final Regulations, 40 C.F.R. §422.32, 422.33, App. 1318-19.

B. EFA's Recommended Technology Is Based On Patently Erroneous Assumptions.

from food grade calcium phosphate plants consists of (1) the elimination of half the raw aqueous wastes via the substitution of dry dust collection for wet scrubbers and (2) the lime treatment and vacuum filtration of the other half of the raw aqueous wastes to a level of effluent reduction which EPA "expects" will permit recycle to process without causing FDA's food grade purity requirements for calcium phosphate to be exceeded. Petitioners take issue

National Research Council, Food Chemicals Codex, 146-51 (2d ed. 1972) (cited portions attached as appendix E).

in this brief with the second segment of EPA's recommended technology: lime treatment, vacuum filtration, and recycle to process.

segment of its technology is based on Monsanto's Trenton, Michigan plant (006). Development Document, App. 1785. Trenton, Michigan is a food grade sodium tripolyphosphate (STPP) plant; it manufactures no calcium phosphate. App. 945, 949, 956, 1323, 1327.

As was pointed out in the discussion of food grade STPP, the Trenton, Michigan plant does not achieve zero discharge of process waste water. Furthermore, EPA was able to cite not a single food grade calcium phosphate plant that achieves zero discharge.

what EPA actually did in constructing the lime treatmentvacuum filtration segment of its recommended technology was: it
took the raw waste load of Monsanto's Carondelet, Missouri food
grade calcium phosphate plant (App. 949, 956). It applied to that
raw waste load the results of a laboratory experiment on filtration
of the effluent from the Trenton plant. EPA did not use the actual
treatment efficiencies of the Trenton Michigan STPP plant's double
liming and vacuum filtration system.

After standard lime treatment for neutralization and precipitation of phosphates, EPA projects that vacuum filtration can achieve reduction of the phosphate suspended solids level to 0.5 miligrams

^{1/} See page 72, supra.

^{2/}Occidental's Davenport, Iowa plant (182) does not make <u>food grade</u> calcium phosphate (App. 487) and Monsano's Carondelet, Missouri plant does not achieve zero discharge (App. 537, 603).

per liter (mg/l). Development Document, App. 1785. EPA's only basis in the record for projecting that vacuum filtration can reduce the suspended solids content of the water from phosphates to 0.5 mg/l is a citation to a 1969 report prepared for Monsanto in connection with plans for treatment at Trenton. Contractor's Report, App. 139, 155. The report is in the record. App. 858 et seq., 871-72.

Monsanto patiently pointed out to EPA's Contractor and to EPA in comments on the Contractor's Report and on the Proposed Regulations themselves that the 0.5 mg/l figure was based only on some experimental laboratory filtration of the effluent at Trenton, Michigan but that the subsequent actual experience of the exemplary treatment system at Trenton, Michigan was that vacuum filtration achieves a level of phosphate suspended solids removal ranging from 50-150 mg/l (100-300 times higher than the prototype published figure EPA incorporated into its recommended technology). App. 945, 1296, 1323. EPA never even acknowledged much less responded to these comments.

EPA's error in continuing to base its technology in significant part on the assumption that vacuum filtration could reduce the level of phosphate suspended solids to 0.5 mg/l completely distorts its projection for the level of total suspended solids its technology can achieve. Using the erroneous 0.5 mg/l figure, for the achievable level of phosphate suspended solids, EPA calculated that its technology

Phosphate suspended solids are those very fine particles of calcium phosphate in the saturated process waste stream which, because of their size, have not been removed by gravity settling or filtration.

(1b/ton). Development Document, App. 1785. Substituting the correct range of phosphate suspended solids achieved by vacuum filtration at the exemplary Trenton, Michigan plant, the total suspended solids level achieved jumps to a range of 12 to 1.25 lb/ton. This range is 84 to 250 times higher than the level of total suspended solids (the incorrect .005 lb/ton figure) which EPA "expected" to be compatible with recycle to a food grade calcium phosphate plant.

Development Document, App. 1785.

achieve a phosphate suspended solids level of .05 mg/l by parenthetically adding "possibly after conditioning with a polymeric flocculent."

Development Document, App. 1785. EPA's recommended use of a polymeric flocculent in treating the waste from a food grade calcium phosphate plant prior to vacuum filtration and recycle to process is technically unsound, as was clearly pointed out to EPA by EPA's own Contractor:

"Polymeric flocculents could significantly reduce the suspended solids in the effluent, <u>but they</u> cannot be used <u>here</u> [Monsanto's Carondelet, Missouri, food grade calcium phosphate plant] <u>since the product</u> is all food grade and they would contaminate recycle

The conversion factor from mg/l to lbs/gal is .00000833. Therefore at 50 mg/l of suspended solids and a flow of 1000 gals/ton of product (Development Document, App. 1785), the <u>pounds</u> of suspended solids per ton of product would be: 1000 x .00000833 x 50 = .42. For 150 mg/l of suspended solids the pounds of suspended solids per ton of product would be: 1000 x .00000833 x 150 = 1.25.

^{2/} A polymeric flocculent is a material which, when added to the process waste water, causes small particles of suspended solids to bind together, thus enhancing their removal by gravity settling or filtration.

streams." App. 538 (emphasis added).

- C. EPA's Recommended Treatment Technology Failed To Consider Significant Effluent Pollution Control Problems Which Could Prevent Recycle Because Of The Need To Maintain Food Purity
 - EPA Failed To Consider The Inevitable Buildup Of Non-Phosphate Dissolved Solids In Its Recommended Recycle System.

Arthur D. Little, Inc., the firm selected by EPA to prepare the Economic (Impact) Analysis of the effluent limitations guidelines for the phosphorus chemicals industry, filed a comment with EPA criticizing the Contractor's Report's recommended recycle technology for food grade phosphate plants on the ground that: "[i]t is highly improbable that product specifications can be maintained on total recycle since impurities entering with makeup water and the raw materials will build up in concentration." App. 1592.

A.D. Little was simply stating the chemical engineering fact discussed above in connection with P₂S₅ plants (pages 68-69, supra): in a closed loop system untreated impurities from the makeup water and raw materials build up incrementally each trip through the loop. In constructing its recommended technology for achieving zero discharge from food grade calcium phosphate plants, EPA ignored this axiom by erroneously equating total dissolved solids with

For other comments warning EPA, to no avail, that the use of polymeric flocculents in the context of its recommended technology for food grade calcium phosphate was undemonstrated and inappropriate See App. 945, 950, 957, 1291, 1298, 1232.

dissolved phosphates and by considering only one pass through its $\frac{1}{2}$ recommended recycle loop. Development Document, App. 1785.

Thus, even assuming that EPA's recommended technology fully achieves as the level of dissolved phosphates the limit which EPA erroneously designates as the level of total dissolved solids (0.003 lb/ton, Development Document, App. 1785), concentrations of solids in the makeup water and raw materials other than phosphates are still passing repeatedly through the loop untreated and are incrementally building up. Such dissolved solids could include chlorides (Development Document, App. 1719; App. 267-68, 544, 593), fluorides (Development Document, App. 1718; App. 170, 229-41, 593), arsenic (Development Document, App. 1723), nitrates (Development Document, App. 1719; App. 267-68, 589), sulfates (Development Document), App. 1718-19; App. 592), and lead (App. 594.)

The factor to convert from dissolved phosphate ion to dissolved dibasic calcium phosphate is 1.4. Thus .3 mg/l of phosphate corresponds to a total dissolved calcium phosphate of .4 mg/l. The following calculation converts a .4 mg/l concentration into pounds per ton (lb/ton) of product at a waste flow of 1,000 gallons per ton (gal/ton) of product, the food grade calcium phosphate plant waste flow posited by EPA in the Development Document (App. 1778, 1785). Since the conversion factor from miligrams per liter (mg/l) to pounds per ton (lb/ton) is .00000833 at 1,000 gallons per ton (gal/ton) of product the pounds of dibasic calcium phosphate in the waste would be 1000 x .00000833 x .4 - .003 lb/ton. This figure .003 lb/ton of dissolved phosphate corresponds exactly with the .003 lb/ton figure EPA cites in the Development Document as total dissolved solids. App. 1785.

^{2/} Although arsenic is removed from phosphoric acid to a harmless level before the phosphoric acid is used in the manufacture of food grade calcium phosphate, the harmless traces of arsenic in the acid could be gradually increased to a more dangerous concentration by total recycle since the traces of arsenic would incrementally build up each trip through the loop.

Therefore, particularly in light of the very stringent calcium phosphate food grade purity requirements relating to arsenic, fluoride, lead, and heavy metals, it was a critical error of omission for EPA to neglect, as it did, to at least discuss the implications that the continual build up of such nonphosphate dissolved solids in its proposed recycle system would have upon the maintenance of Federally required food grade purity specifications.

2. EPA Failed To Deal With The Problems Of Contaminated Stormwater Runoff, Upsets, and Leaks and Spills.

As discussed <u>supra</u>, EPA's expansive definition of process waste water could include contaminated stormwater runoff, upsets, and leaks and spills. Although EPA itself clearly recognized that total recycle of such contaminated non-production related streams might not be possible due to purity (stormwater runoff, Development Document, App. 1731) or other unstated considerations (upset wastes, Development Document, App. 1731), EPA totally failed to consider the impact of recycling such waste streams on the specific Federal purity specifications for food grade calcium phosphate.

D. EPA's Conclusions About Recycling Without Impairing Food Grade Purity Are Bald Assumptions Totally Unsupported By The Record.

Unfortunately ignored by EPA were comments throughout the record

(1) warning EPA that, even if its technology did all EPA claimed,

the treated waste water from food grade calcium phosphate plants still

^{1/} Pages 38-41.

could not be recycled to process without causing Federally required food grade purity requirements to be exceeded (App. 946, 950, 957, 1328); and (2) recommending to EPA that food grade phosphate plants be excluded from EPA's guidelines pending further study (App. 952, 959, 1330, 1363).

Instead, EPA, having stated its projection of the total suspended and total dissolved solids its technology can achieve for the process waste from food grade calcium phosphate plants, boldly asserts that:

"With the achievement of these extremely low levels of TDS and TSS, or even with considerable relaxation of these levels, the treated-waste water from the manufacture of food grade calcium phosphate is expected to meet the U.S. Food and Drug Administration criteria for process water and this treated water can then be recycled back into the process." Development Document, App. 1785. (emphasis added).

Even assuming, purely for the sake of argument, that EPA's recommended technology were both complete and error free, rendering its projected levels of effluent pollution reduction realistic, there is no basis or explanation in the record whatsoever underlying EPA's sanguine "expectation" that these levels are compatible with recycle to food grade calcium phosphate process and will not cause that product's stringent FDA purity specifications to be exceeded. Inexplicably, EPA's record contains no allusion to the specific food grade specifications for calcium phosphate, much less a discussion by EPA detailing the impact of its projected levels of effluent pollution reduction on those specifications in the event of recycle to process. 1/2 The

^{1/} As in the case of food grade STPP, the problems of recycle would be even greater in a multiproduct complex, which is usual in the phosphate industry. See note 1 and accompanying text, supra, at page 73.

record is barren of evidence that EPA conferred with or sought to obtain the advice of FDA on this point.

There is a clincher for EPA's complete lack of reasoned concern for product purity. After EPA's statement concerning its expectation that its technology achieved a sufficient level of effluent pollution reduction to permit recycle to process in consonance with FDA requirements, EPA went on to state that:

"In fact, once the commitment to total recycle is made, the lime treatment step may be bypassed since the ionic species from the dissolved solids and the phosphoric acid are precisely those desired in the reaction vessel." Development Document, App. 1785 (emphasis added).

That statement is inherently inconsistent with the underlying premise of EPA's own elaborate treatment-to-a-level-of-recyclability technology. In short, as one commenter put it, "... the statement." once the commitment to total recycle is made, the lime treatment step may be by-passed' is unsubstantiated and, in fact, unbelievable. "App. 946 (emphasis added).

Conclusion

The Court should dismiss the petition on the ground that it lacks jurisdiction in this proceeding to review regulations under Section 304(b). Should the Court conclude that it has jurisdiction to review these regulations, it should set the regulations aside and remand them to EPA with the direction that EPA comply with the

statute and issue regulations in conformity with Section 304(b).

Respectfully submitted,

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APPENDIX A

The pertinent provisions of the Federal Water Pollution Control Act, as amended, 33 U.S.C. §§1251 et seq., are as follows:

§ 1311. Effluent limitations—Illegality of pollutant discharges except in compliance with law

(a) Except as in compliance with this section and sections 1312; 1316, 1317, 1328, 1342, and 1344 of this title, the discharge of any pollutant by any person shall be unlawful.

Timetable for achievement of objectives

(b) In order to carry out the objective of this chapter there shall be achieved—

(1) (A) not later than July 1, 1977, effluent limitations for point sources, other than publicly owned treatment works, (i) which shall require the application of the best practicable control technology currently available as defined by the Administrator pursuant to section 1314(b) of this title, or (ii) in the case of a discharge into a publicly owned treatment works which meets the requirements of subparagraph (B) of this paragraph, which shall require compliance with any applicable pretreatment requirements and any requirements under section 1317 of this title; and

(B) for publicly owned treatment works in existence on July 1, 1977, or approved pursuant to section 1283 of this title prior to June 30, 1974 (for which construction must be completed within four years of approval), effluent limitations based upon secondary treatment as defined by the Administrator pursuant to section 1314

(d) (1) of this title; or,

(C) not later than July 1, 1977, any more stringent limitation, including those necessary to meet water quality standards, treatment standards, or schedules of compliance, established pursuant to any State law or regulations (under authority preserved by section 1370 of this title) or any other Federal law or regulation, or required to implement any applicable water quality standard estab-

lished pursuant to this chapter. (2) (A) not later than July 1, 1983, effluent limitations for categories and classes of point sources, other than publicly owned treatment works, which (i) shall require application of the best available technology economically achievable for such category or class, which will result in reasonable further progress toward the national goal of eliminating the discharge of all pollutants, as determined in accordance with regulations issued by the Administrator pursuant to section 1314(b) (2) of this title, which such effluent limitations shall require the elimination of discharges of all pollutants if the Administrator finds, on the basis of information available to him (including information developed pursuant to section 1325 of this title), that such elimination is technologically and economically achievable for a category or class of point sources as determined in accordance with regulations issued by the Administrator pursuant to section 1314(b) (2) of this title, or (ii) in the case of the introduction of a pollutant into a publicly owned treatment works which meets the requirements of subparagraph (B) of this paragraph, shall require compliance with any applicable pretreatment requirements and any other requirement under section 1317 of this title: and

(B) not later than July 1, 1983, compliance by all publicly owned treatment works with the requirements set forth in section 1281 (g) (2) (A) of this title.

Modification of timetable

(c) The Administrator may modify the requirements of subsection (b) (2) (A) of this section with respect to any point source for which a permit application is filed after July 1, 1977, upon a showing by the owner or operator of such point source satisfactory to the Administrator that such modified requirements (1) will represent the maximum use of technology within the economic capability of the owner or operator; and (2) will result in reasonable further progress toward the elimination of the discharge of pollutants.

Review and revision of effluent limitations

(d) Any effluent limitation required by paragraph (2) of subsection (b) of this section shall be reviewed at least every five years and, if appropriate, revised pursuant to the procedure established under such paragraph.

All point discharge source application of effluent limitations

(e) Effluent limitations established pursuant to this section or section 1312 of this title shall be applied to all point sources of discharge of pollutants in accordance with the provisions of this chapter.

Illegality of discharge of radiological, chemical, or biological warfare agents or high-level radioactive waste

(f) Notwithstanding any other provisions of this chapter it shall be unlawful to discharge any radiological, chemical, or biological warfare agent or high-level radioactive waste into the navigable waters. June 30, 1948, c. 758, Title III, § 301, as added Oct. 18, 1972, Pub.L. 92-500, § 2, 86 Stat. 844.

§ 1312. Water quality related effluent limitations

- (a) Whenever, in the judgment of the Administrator, discharges of pollutants from a point source or group of point sources, with the application of effluent limitations required under section 1311(b) (2) of this title, would interfere with the attainment or maintenance of that water quality in a specific portion of the navigable waters which shall assure protection of public water supplies, agricultural and industrial uses, and the protection and propagation of a balanced population of shellfish, fish and wildlife, and allow recreational activities in and on the water, effluent limitations (including alternative effluent control strategies) for such point source or sources shall be established which can reasonably be expected to contribute to the attainment or maintenance of such water quality.
- (b) (1) Prior to establishment of any effluent limitation pursuant to subsection (a) of this section, the Administrator shall issue notice of intent to establish such limitation and within ninety days of such notice hold a public hearing to determine the relationship of the economic and social costs of achieving any such limitation or limitations, including any economic or social dislocation in the affected community or communities, to the social and economic benefits to be obtained (including the attainment of the objective of this chapter) and to determine whether or not such effluent limitations can be implemented with available technology or other alternative control strategies.
- (2) If a person affected by such limitation demonstrates at such hearing that (whether or not such technology or other alternative control strategies are available) there is no reasonable relationship between the economic and social costs and the benefits to be obtained (including attainment of the objective of this chapter), such limitation shall not become effective and the Administrator shall adjust such limitation as it applies to such person.
- (c) The establishment of effluent limitations under this section shall not operate to delay the application of any effluent limitation established under section 1311 of this title.

 June 30, 1948, c. 758, Title III, § 302, as added Oct. 18, 1972, Pub.L. 92-500, § 2, 86 Stat. 846.

§ 1314. Information and guidelines-Criteria development and publication

(a) (1) The Administrator, after consultation with appropriate Federal and State agencies and other interested persons, shall develop and publish, within one year after October 18, 1972 (and from time to time thereafter revise) criteria for water quality accurately reflecting the latest scientific knowledge (A) on the kind and extent of all identifiable effects on health and welfare including, but not limited to, plankton, fish, shellfish, wildlife, plant life, shorelines, beaches, esthetics, and recreation which may be expected from the presence of pollutants in any body of water, including ground water; (B) on the concentration and dispersal of pollutants, or their byproducts, through biological, physical, and chemical processes; and (C) on the effects of pollutants on biological community diversity, productivity, and stability, including information on the factors affecting rates of eutrophication and rates of organic and inorganic sedimentation for varying types of receiving waters.

(2) The Administrator, after consultation with appropriate Federal and State agencies and other interested persons, shall develop and publish, within one year after October 18, 1972 (and from time to time thereafter revise) information (A) on the factors necessary to restore and maintain the chemical, physical, and biological integrity of all navigable waters, ground waters, waters of the contiguous zone, and the oceans; (B) on the factors necessary for the protection and propagation of shellfish, fish, and wildlife for classes and categories of receiving waters and to allow recreational activities in and on the water; and (C) on the measurement and classification of water quality; and (D) for the purpose of section 1313 of this title, on and the identification of pollutants suitable for maximum daily load measurement correlated with the achievement of water quality objectives.

(3) Such criteria and information and revisions thereof shall be issued to the States and shall be published in the Federal Register and

otherwise made available to the public.

Effluent limitation guidelines

(b) For the purpose of adopting or revising effluent limitations under this chapter the Administrator shall, after consultation with appropriate Federal and State agencies and other interested persons, published within one year of October 18, 1972, regulations, providing guidelines for effluent limitations and, at least annually thereafter, revise, if appropriate, such regulations. Such regulations shall—

(1) (A) identify, in terms of amounts of constituents and chemical, physical, and biological characteristics of pollutants, the degree of effluent reduction attainable through the application of the best practicable control technology currently available for classes and categories of point sources (other than publicly owned treat-

ment works); and

- (B) specify factors to be taken into account in determining the control measures and practices to be applicable to point sources (other than publicly owned treatment works) within such categories or classes. Factors relating to the assessment of best practicable control technology currently available to comply with subsection (b) (1) of section 1311 of this title shall include consideration of the total cost of application of technology in relation to the effluent reduction benefits to be achieved from such application, and shall also take into account the age of equipment and facilities involved, the process employed, the engineering aspects of the application of various types of control techniques, process changes, non-water quality environmental impact (including energy requirements), and such other factors as the Administrator deems appropriate;
- (2) (A) identify, in terms of amounts of constituents and chemical, physical, and biological characteristics of pollutants, the degree of effluent reduction attainable through the application of the best control measures and practices achievable including treatment techniques, process and procedure innovations, operating methods, and other alternatives for classes and categories of point sources (other than publicly owned treatment works); and

(B) specify factors to be taken into account in determining the best measures and practices available to comply with subsection (b) (2) of section 1311 of this title to be applicable to any point source (other than publicly owned treatment works) within such categories or classes. Factors relating to the assessment of best available technology shall take into account the age of equipment and facilities involved, the process employed, the engineering aspects of the application of various types of control techniques, process changes, the cost of achieving such effluent reduction, non-water quality environmental impact (including energy requirements), and such other factors as the Administrator deems appropriate; and

(3) Identify control measures and practices available to eliminate the discharge of pollutants from categories and classes of point sources, taking into account the cost of achieving such elimination

of the discharge of pollutants.

Poliution discharge elimination procedures

(c) The Administrator, after consultation, with appropriate Federal and State agencies and other interested persons, shall issue to the States and appropriate water pollution control agencies within 270 days after October 18, 1972 (and from time to time thereafter) information on the processes, procedures, or operating methods which result in the elimination or reduction of the discharge of pollutants to implement standards of performance under section 1316 of this title. Such information shall include technical and other data, including costs, as are available on alternative methods of elimination or reduction of the discharge of pollutants. Such information, and revisions thereof, shall be published in the Federal Register and otherwise shall be made available to the public.

Secondary treatment information; alternative waste treatment management techniques and systems

(d) (1) The Administrator, after consultation with appropriate Federal and State agencies and other interested persons, shall publish within sixty days after October 18, 1972 (and from time to time thereafter) information, in terms of amounts of constituents and chemical, physical, and biological characteristics of pollutants, on the degree of effluent reduction attainable through the application of secondary treatment.

(2) The Administrator, after consultation with appropriate Federal and State agencies and other interested persons, shall publish within nine months after October 18, 1972 (and from time to time thereafter) information on alternative waste treatment management techniques and sys-

tems available to implement section 1281 of this title.

Identification and evaluation of nonpoint sources of poliution; processes, procedures, and methods to control poliution

(e) The Administrator, after consultation with appropriate Federal and State agencies and other interested persons, shall issue to appropriate Federal agencies, the States, water pollution control agencies, and agencies designated under section 1288 of this title, within one year after October 18, 1972 (and from time to time thereafter) information including (1) guidelines for identifying and evaluating the nature and extent of nonpoint sources of pollutants, and (2) processes, procedures, and methods to control pollution resulting from—

(A) agricultural and silvicultural activities, including runoff from

fields and crop and forest lands;

(B) mining activities, including runoff and siltation from new, currently operating, and abandoned surface and underground mines;

(C) all construction activity, including runoff from the facilities resulting from such construction;

(D) the disposal of pollutants in wells or in subsurface excava-

tions:

(E) salt water intrusion resulting from reductions of fresh water flow from any cause including extraction of ground water, irrigation, obstruction, and diversion; and

(F) changes in the movement, flow, or circulation of any navigable waters or ground waters, including changes caused by the construction of dams, levees, channels, causeways, or flow diversion facilities.

Such information and revisions thereof shall be published in the Federal Register and otherwise made available to the public.

Guidelines for pretreatment of poliotants

(f) (1) For the purpose of assisting States in carrying out programs under section 1342 of this title, the Administrator shall publish, within one hundred and twenty days after October 18, 1972, and review at least annually thereafter and, if appropriate, revise guidelines for pretreatment of pollutants which he determines are not susceptible to treatment by publicly owned treatment works. Guidelines under this subsection shall be established to control and prevent the discharge into the navigable waters, the contiguous zone, or the ocean (either directly or through publicly owned treatment works) of any pollutant which interferes with, passes through, or otherwise is incompatible with such works.

(2) When publishing guidelines under this subsection, the Administrator shall designate the category or categories of treatment works to

which the guidelines shall apply.

Test procedure guidelines

(g) The Administrator shall, within one hundred and eighty days from October 18, 1972, promultate guidelines establishing test procedures for the analysis of pollutants that shall include the factors which must be provided in any certification pursuant to section 1341 of this title or permit application pursuant to section 1342 of this title.

Guidelines for monitoring, reporting, enforcement, funding, personnel, and manpower

(h) The Administrator shall (1) within sixty days after October 18, 1972, promulgate guidelines for the purpose of establishing uniform application forms and other minimum requirements for the acquisition of information from owners and operators of point-sources of discharge subject to any State program under section 1342 of this title, and (2) within sixty days from October 18, 1972, promulgate guidelines establishing the minimum procedural and other elements of any State program under section 1342 of this title which shall include:

(A) monitoring requirements;

(B) reporting requirements (including procedures to make information available to the public);

(C) enforcement provisions; and

(D) funding, personnel qualifications, and manpower requirements (including a requirement that no board or body which approves permit applications or portions thereof shall include, as a member, any person who receives, or has during the previous two years received, a significant portion of his income directly or indirectly from permit holders or applicants for a permit.)

Restoration and enhancement of publicly owned fresh water lakes

(i) The Administrator shall, within 270 days after October 18, 1972 (and from time to time thereafter), issue such information on methods, procedures, and processes as may be appropriate to restore and enhance the quality of the Nation's publicly owned fresh water lakes.

Agreements with Secretaries of Agriculture, Army, and Interior to provide maximum utilization of programs to achieve and maintain water quality; transfer of funds; authorization of appropriations

(j) (1) The Administrator shall, within an months from October 18, 1972, enter into agreements with the Secretary of Agriculture, the Secretary of the Army, and the Secretary of the Interior to provide for the maximum utilization of the appropriate programs authorized under other Federal law to be carried out by such Secretaries for the purpose of achieving and maintaining water quality through appropriate implementation of plans approved under section 1288 of this title.

- (2) The Administrator, pursuant to any agreement under paragraph (1) of this subsection is anthorized to transfer to the Secretary of Agriculture, the Secretary of the Army, or the Secretary of the Interior any funds appropriated under paragraph (3) of this subsection to supplement any funds otherwise appropriated to carry out appropriate programs authorized to be carried out by such Secretaries.
- (3) There is authorized to be appropriated to carry out the provisions of this subsection, \$100,000,000 per fiscal year for the fiscal year ending June 30, 1973, and the fiscal year ending June 30, 1974.

 June 30, 1948, c. 758, Title III, § 304, as added Oct. 18, 1972, Pub.L. 92-500, § 2, 86 Stat. 850.

§ 1316. National standards of performance—Definitions

(a) For purposes of this section:

- (1) The term "standard of performance" means a standard for the control of the discharge of pollutants which reflects the greatest degree of effluent reduction which the Administrator determines to be achievable through application of the best available demonstrated control technology, processes, operating methods, or other alternatives, including, where practicable, a standard permitting no discharge of pollutants.
- (2) The term "new source" means any source, the construction of which is commenced after the publication of proposed regulations prescribing a standard of performance under this section which will be applicable to such source, if such standard is thereafter promulgated in accordance with this section.
- (3) The term "source" means any building, structure, facility, or installation from which there is or may be the discharge of pollutants.
- (4) The term "owner or operator" means any person who owns, leases, operates, controls, or supervises a source.
- (5) The term "construction" means any placement, assembly, or installation of facilities or equipment (including contractual obligations to purchase such facilities or equipment) at the premises where such equipment will be used, including preparation work at such premises.

Categories of sources; Federal standards of performance for new sources

(b) (1) (A) The Administrator shall, within ninety days after October 18, 1972, publish (and from time to time thereafter shall revise) a list of categories of sources, which shall, at the minimum, include:

pulp and paper mills; paperboard, builders paper and board mills; meat product and rendering processing; dairy product processing; grain mills; canned and preserved fruits and vegetables processing; canned and preserved seafood processing; sugar processing; textile mills; cement manufacturing; feedlots: electroplating; organic chemicals manufacturing; inorganic chemicals manufacturing; plastic and synthetic materials manufacturing; soap and detergent manufacturing; fertilizer manufacturing; petroleum refining; iron and steel manufacturing: nonferrous metals manufacturing; phosphate manufacturing; steam electric powerplants; ferroallov manufacturing: leather tanning and finishing; glass and asbestos manufacturing; rubber processing; and timber products processing.

- (B) As soon as practicable, but in no case more than one year, after a category of sources is included in a list under subparagraph (A) of this paragraph, the Administrator shall propose and publish regulations establishing Federal standards of performance for new sources within such category. The Administrator shall afford interested persons an opportunity for written comment on such proposed regulations. After considering such comments, he shall promulgate, within one hundred and twerty days after publication of such proposed regulations, such standards with such adjustments as he deems appropriate. The Administrator shall, from time to time, as technology and alternatives change, revise such standards following the procedure required by this subsection for promulgation of such standards. Standards of performance, or revisions thereof, shall become effective upon promulgation. In establishing or revising Federal standards of performance for new sources under this section, the Administrator shall take into consideration the cost of achieving such effluent reduction, and any non-water quality environmental impact and energy requirements.
- (2) The Administrator may distinguish among classes, types, and sizes within categories of new sources for the purpose of establishing such standards and shall consider the type of process employed (including whether batch or continuous).
- (3) The provisions of this section shall apply to any new source owned or operated by the United States.

State enforcement of standards of performance

(c) Each State may develop and submit to the Administrator a procedure under State law for applying and enforcing standards of performance for new sources located in such State. If the Administrator finds that the procedure and the law of any State require the application and enforcement of standards of performance to at least the same extent as required by this section, such State is authorized to apply and enforce such standards of performance (except with respect to new sources owned or operated by the United States).

Protection from more stringent standards

(d) Notwithstanding any other provision of this chapter, any point source the construction of which is commenced after October 18, 1972, and which is so constructed as to meet all applicable standards of performance shall not be subject to any more stringent standard of performance during a ten-year period beginning on the date of completion of such construction or during the period of depreciation or amortization of such facility for the purposes of section 167 or 169 (or both) of Title 26, whichever period ends first.

Hegality of operation of new sources in violation of applicable standards of performance

(e) After the effective date of standards of performance promulgated under this section, it shall be unlawful for any owner or operator of any new source to operate such source in violation of any standard of performance applicable to such source.

June 30, 1948, c. 758, Title III, § 306, as added Oct. 18, 1972, Pub.L. 92-500, § 2, 86 Stat. 854.

§ 1317. Texic and pretreatment effluent standards; establishment; revision; illegality of source operation in violation of standards

(a) (1) The Administrator shall, within ninety days after October 18, 1972, publish (and from time to time thereafter revise) a list which includes any toxic pollutant or combination of such pollutants for which an effluent standard (which may include a prohibition of the discharge of such pollutants or combination of such pollutants) will be established under this section. The Administrator in publishing such list shall take into account the toxicity of the pollutant, its persistence, degradability, the usual or potential presence of the affected organisms in any waters, the importance of the affected organisms and the nature and extent of the effect of the toxic pollutant on such organisms.

- (2) Within one hundred and eighty days after the date of publication of any list, or revision thereof, containing toxic pollutants or combination of pollutants under paragraph (1) of this subsection, the Administrator, in accordance with section 553 of Title 5, shall publish a proposed effluent standard (or a prohibition) for such pollutant or combination of pollutants which shall take into account the toxicity of the pollutant, its persistence, degradability, the usual or potential presence of the affected organisms in any waters, the importance of the affected organisms and the nature and extent of the effect of the toxic pollutant on such organisms, and he shall publish a notice for a public hearing on such proposed standard to be held within thirty days. As soon as possible after such hearing, but not later than six months after publication of the proposed effluent standard (or prohibition), unless the Administrator finds, on the record, that a modification of such proposed standard (or prohibition) is justified based upon a preponderance of evidence adduced at such hearings, such standard (or prohibition) shall be promulgated.
- (3) If after a public hearing the Administrator finds that a modification of such proposed standard (or prohibition) is justified, a revised effluent standard (or prohibition) for such pollutant or combination of pollutants shall be promulgated immediately. Such standard (or prohibition) shall be reviewed and, if appropriate, revised at least every three years.

(4) Any effluent standard promulgated under this section shall be at that level which the Administrator determines provides an ampie

margin of safety.

(5) When proposing or promulgating any effluent standard (or prohibition) under this section, the Administrator shall designate the category or categories of sources to which the effluent standard (or prohibition) shall apply. Any disposal of dredged material may be included in such a category of sources after consultation with the Secretary of the

(6) Any effluent standard (or prohibition) established pursuant to this section shall take effect on such date or dates as specified in the order promulgating such standard, but in no case more than one year

from the date of such promulgation.

(7) Prior to publishing any regulations pursuant to this section the Administrator shall, to the maximum extent practicable within the time provided, consult with appropriate advisory committees, States, inde-

pendent experts, and Federal departments and agencies.

- (b) (1) The Administrator shall, within one hundred and eighty days after October 18, 1972, and from time to time thereafter, publish proposed regulations establishing pretreatment standards for introduction of pollutants into treatment works (as defined in section 1292 of this title) which are publicly owned for those pollutants which are determined not to be susceptible to treatment by such treatment works or which would interfere with the operation of such treatment works. Not later than ninety days after such publication, and after opportunity for public hearing, the Administrator shall promulgate such pretreatment standards. Pretreatment standards under this subsection shall specify a time for compliance not to exceed three years from the date of promulgation and shall be established to prevent the discharge of any pollutant through treatment works (as defined in section 1292 of this title) which are publicly owned, which pollutant interferes with, passes through, or otherwise is incompatible with such works.
- (2) The Administrator shall, from time to time, as control technology, processes, operating methods, or other alternatives change, revise such standards following the procedure established by this subsection for promulgation of such standards.

(3) When proposing or promulgating any pretreatment standard under this section, the Administrator shall designate the category or categories

of sources to which such standard shall apply.

(4) Nothing in this subsection shall affect any pretreatment requirement established by any State or local law not in conflict with any pretreatment standard established under this subsection.

(c) In order to insure that any source introducing pollutants into a publicly owned treatment works, which source would be a new source subject to section 1316 of this title if it were to discharge pollutants, will not cause a violation of the effluent limitations established for any such treatment works, the Administrator shall promulgate pretreatment standards for the category of such sources simultaneously with the promulgation of standards of performance under section 1316 of this title for the equivalent category of new sources. Such pretreatment standards shall prevent the discharge of any pollutant into such treatment works, which pollutant may interfere with, pass through, or otherwise be incompatible with such works.

(d) After the effective date of any effluent standard or prohibition or pretreatment standard promulgated under this section, it shall be unlawful for any owner or operator of any source to operate any source in violation of any such effluent standard or prohibition or pretreatment

standard.

June 30, 1948, c. 758, Title III, § 307, as added Oct. 18, 1972, Pub.L. 92-500, § 2, 86 Stat. 856.

§ 1319. Enforcement-State enforcement; compliance orders

- (a) (1) Whenever, on the basis of any information available to him, the Administrator finds that any person is in violation of any condition or limitation which implements section 1311, 1312, 1316, 1317, or 1318 of this title in a permit issued by a State under an approved permit program under section 1342 of this title, he shall proceed under his authority in paragraph (3) of this subsection or he shall notify the person in alleged violation and such State of such finding. If beyond the thirtieth day after the Administrator's notification the State has not commenced appropriate inforcement action, the Administrator shall issue an order requiring such person to comply with such condition or limitation or shall bring a civil action in accordance with subsection (b) of this section.
- (2) Whenever, on the basis of information available to him, the Administrator finds that violations of permit conditions or limitations as set forth in paragraph (1) of this subsection are so widespread that such violations appear to result from a failure of the State to enforce such permit conditions or limitations effectively, he shall so notify the State. If the Administrator finds such failure extends beyond the thirtieth day after such notice, he shall give public notice of such finding. During the period beginning with such public notice and ending when such State satisfies the Administrator that it will enforce such conditions and limitations (hereafter referred to in this section as the period of "federally assumed enforcement"), the Administrator shall enforce any permit condition or limitation with respect to any person—
 - (A) by issuing an order to comply with such condition or limitation, or
 - (B) by bringing a civil action under subsection (b) of this section.
- (3) Whenever on the basis of any information available to him the Administrator finds that any person is in violation of section 1311, 1312, 1316, 1317, or 1318 of this title, or is in violation of any permit condition or limitation implementing any of such sections in a permit issued under section 1342 of this title by him or by a State, he shall issue an order requiring such person to comply with such section or requirement, or he shall bring a civil action in accordance with subsection (b) of this section.
- (4) A copy of any order issued under this subsection shall be sent immediately by the Administrator to the State in which the violation occurs and other affected States. Any order issued under this subsection shall be by personal service and shall state with reasonable specificity the nature of the violation, specify a time for compliance, not to exceed thirty days, which the Administrator determines is reasonable, taking into account the seriousness of the violation and any good faith efforts to comply with applicable requirements. In any case in which an order under this subsection (or notice to a violator under paragraph (1) of this subsection) is issued to a corporation, a copy of such order (or notice) shall be served on any appropriate corporate officers. An order issued under this subsection relating to a violation of section 1318 of this title shall not take effect until the person to whom it is issued has had an opportunity to confer with the Administrator concerning the alleged violation.

Civil actions

(b) The Administrator is authorized to commence a civil action for appropriate relief, including a permanent or temporary injunction, for any violation for which he is authorized to issue a compliance order under subsection (a) of this section. Any action under this subsection may be brought in the district court of the United States for the district in which the defendant is located or resides or is doing business, and such court shall have jurisdiction to restrain such violation and to require compliance. Notice of the commencement of such action shall be given immediately to the appropriate State.

Criminal penalties

(c) (1) Any person who willfully or negligently violates section 1311, 1312, 1316, 1317, or 1318 of this title, or any permit condition or limitation implementing any of such sections in a permit issued under section 1342 of this title by the Administrator or by a State, shall be punished by a fine of not less than \$2,500 nor more than \$25,000 per day of violation, or by imprisonment for not more than one year, or by both. If the conviction is for a violation committed after a first conviction of such person under this paragraph, punishment shall be by a fine of not more than \$50,000 per day of violation, or by imprisonment for not more than two years, or by both.

(2) Any person who knowingly makes any false statement, representation, or certification in any application, record, report, plan, or other document filed or required to be maintained under this chapter or who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this chapter, shall upon conviction, be punished by a fine of not more than \$10,000, or by imprisonment for not more than six months, or by both.

(3) For the purposes of this subsection, the term "person" shall mean, in addition to the definition contained in section 1362(5) of this title, any responsible corporate officer.

Civil penalties

(d) Any person who violates section 1311, 1312, 1316, 1317, or 1318 of this title, or any permit condition or limitation implementing any of such sections in a permit issued under section 1342 of this title by the Administrator, or by a State, and any person who violates any order issued by the Administrator under subsection (a) of this section, shall be subject to a civil penalty not to exceed \$10,000 per day of such violation.

State liability for judgments and expenses

(e) Whenever a municipality is a party to a civil action brought by the United States under this section, the State in which such municipality is located shall be joined as a party. Such State shall be liable for payment of any judgment, or any expenses incurred as a result of complying with any judgment, entered against the municipality in such action to the extent that the laws of that State prevent the municipality from raising revenues needed to comply with such judgment.

June 30, 1948, c. 758, Title III, § 309, as added Oct. 18, 1972, Pub.L. 92-500, § 2, 86 Stat. 859.

§ 1365. Citizen suits-Authorization; jurisdiction

- (a) Except as provided in subsection (b) of this section, any citizen may commence a civil action on his own behalf—
 - (1) against any person (including (i) the United States, and (ii) any other governmental instrumentality or agency to the extent permitted by the eleventh amendment to the Constitution) who is alleged to be in violation of (A) an effluent standard or limitation

under this chapter or (B) an order issued by the Administrator or a State with respect to such a standard or limitation, or

(2) against the Administrator where there is alleged a failure of the Administrator to perform any act or duty under this chapter which is not discretionary with the Administrator.

The district courts shall have jurisdiction, without regard to the amount in controversy or the citizenship of the parties, to enforce such an effluent standard or limitation, or such an order, or to order the Administrator to perform such act or duty, as the case may be, and to apply any appropriate civil penalties under section 1319(d) of this title.

Notice

- (b) No action may be commenced-
 - (1) under subsection (a) (1) of this section-
 - (A) prior to sixty days after the plaintiff has given notice of the alleged violation (i) to the Administrator, (ii) to the State in which the alleged violation occurs, and (iii) to any alleged violator of the standard, limitation, or order, or
 - (B) if the Administrator or State has commenced and is diligently prosecuting a civil or criminal action in a court of the United States, or a State to require compliance with the standard, limitation, or order, but in any such action in a court of the United States any citizen may intervene as a matter of right.
 - (2) under subsection (a) (2) of this section prior to sixty days after the plaintiff has given notice of such action to the Administrator

except that such action may be brought immediately after such notification in the case of an action under this section respecting a violation of sections 1316 and 1317(a) of this title. Notice under this subsection shall be given in such manner as the Administrator shall prescribe by regulation.

Venue; Intervention by Administrator

- (c) (1) Any action respecting a violation by a discharge source of an effluent standard or limitation or an order respecting such standard or limitation may be brought under this section only in the judicial district in which such source is located.
- (2) In such action under this section, the Administrator, if not a party, may intervene as a matter of right.

Litigation costs

(d) The court, in issuing any final order in any action brought pursuant to this section, may award costs of litigation (including reasonable attorney and expert witness fees) to any party, whenever the court determines such award is appropriate. The court may, if a temporary restraining order or preliminary injunction is sought, require the filing of a bond or equivalent security in accordance with the Federal Rules of Civil Procedure.

Statutory or common law rights not restricted

(e) Nothing in this section shall restrict any right which any person (or class of persons) may have under any statute or common law to seek enforcement of any effluent standard or limitation or to seek any other relief (including relief against the Administrator or a State agency).

Effluent standard or limitation

(f) For purposes of this section, the term "effluent standard or limitation under this chapter" means (1) effective July 1, 1973, an unlaw-

ful act under subsection (a) of section 1311 of this title; (2) an efficient limitation or other limitation under section 1311 or 1312 of this title; (3) standard of performance under section 1316 of this title; (4) prohibition, effluent standard or pretreatment standards under section 1317 of this title; (5) certification under section 1341 of this title; or (6) a permit or condition thereof issued under section 1342 of this title, which is in effect under this chapter (including a requirement applicable by reason of section 1323 of this title).

Citizen

(g) For the purposes of this section the term "citizen" means a person or persons having an interest which is or may be adversely affected.

Civil action by State Governors

(h) A Governor of a State may commence a civil action under subsection (a) of this section, without regard to the limitations of subsection (b) of this section, against the Administrator where there is alleged a failure of the Administrator to enforce an effluent standard or limitation under this chapter the violation of which is occurring in another State and is causing an adverse effect on the public health or welfare in his State, or is causing a violation of any water quality requirement in his State.

June 36, 1948, c. 758, Title V, § 505, as added Oct. 18, 1972, Pub.L. 92-500, § 2, § 5 Stat. 888.

§ 1869. Administrative procedure and judicial review

(a) (1) For purposes of obtaining information under section 1315 of this title, or carrying out section 1367(e) of this title, the Administrator may issue subpenas for the attendance and testimony of witnesses and the production of relevant papers, books, and documents, and he may administer oaths. Except for effluent data, upon a showing satisfactory to the Administrator that such papers, books, documents, or information or particular part thereof, if made public, would divulge trade secrets or secret processes, the Administrator shall consider such record, report, or information or particular portion thereof confidential in accordance with the purposes of section 1905 of Title 18, except that such paper, book, document, or information may be disclosed to other officers, employees, or authorized representatives of the United States concerned with carrying out this chapter, or when relevant in any proceeding under this chapter. Witnesses summoned shall be paid the same fees and mileage that are paid witnesses in the courts of the United States. In case of contumacy or refusal to obey a subpens served upon any person under this subsection, the district court of the United States for any district in which such person is found or resides or transacts business, upon application by the United States and after notice to such person, shall have jurisdiction to issue an order requiring such person to appear and give testimony before the Administrator, to appear and produce papers, books, and documents before the Administrator, or both, and any failure to obey such order of the court may be punished by such court as a contempt thereof.

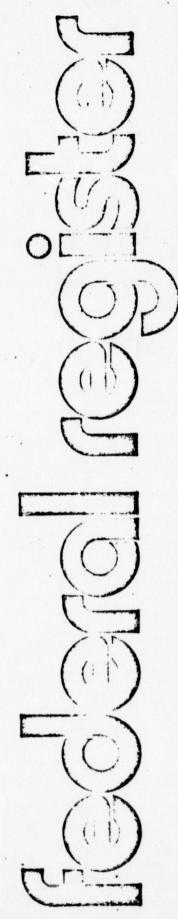
(2) The district courts of the United States are authorized, upon application by the Administrator, to issue subpenas for attendance and testimony of witnesses and the production of relevant papers, books, and documents, for purposes of obtaining information under sections 1314(b) and (c) of this title. Any papers, books, documents, or other informatica or part thereof, obtained by reason of such a subpena shall be subject to the same requirements as are provided in paragraph (1) of this subsection.

(b) (1) Review of the Administrator's action (A) in promulgating any standard of performance under section 1316 of this title, (B) in making any determination pursuant to section 1316 (b) (1) (C) of this title, (C) in promulgating any effluent standard, prohibition, or pretreatment standard under section 1317 of this title, (D) is, making any determination as to a State permit program submitted under section 1342 (b) of this title, (E) in approving or promulgating any effluent limitation or other limitation under section 1311, 1312, or 1316 of this title, and (F) in issuing or denying any permit under section 1342 of this title, may be had the any interested person in the Circuit Court of Appeals of the United States for the Federal judicial district in which such person resides or transacts such business upon application by such person. Any such application shall be made within ninety days from the date of such distermination, approval, promulgation, issuance or denial, or after such date only if such application is based solely on grounds which arose after such minetieth day.

- (2) Action of the Administrator with respect to which review could have been obtained under paragraph (1) of this subsection shall not be subject to judicial review in any civil or criminal proceeding for enforcement.
- (c) In any judicial proceeding brought under subsection (b) of this section in which review is sought of a determination under this chapter required to be made on the record after notice and opportunity for hearing, if any party applies to the court for leave to adduce additional evidence, and shows to the satisfaction of the court that such additional evidence is material and that there were reasonable grounds for the failure to adduce such evidence in the proceeding before the Administrator, the court may order such additional evidence (and evidence in rebuttal thereof) to be taken before the Administrator, in such manner and upon such terms and conditions as the court may deem proper. The Administrator may modify his findings as to the facts, or make new findings, by reason of the additional evidence so taken and he shall file such modified or new findings, and his recommendation, if any, for the modification or setting aside of his original determination, with the return of such additional evidence. June 30, 1948, c. 758, Title V. § 509, as added Oct. 18, 1972, Pub.L. 92-500, § 2, 86 Stat. 891, and amended Dec. 28, 1973, Pub.L. 93-207, § 1(6). 87 Stat. 906.

APPENDIX B

The effluent guidelines and standards for the Phosphate Manufacturing Point Source Category are as follows:



WEDNESDAY, FEBRUARY 20, 1974 WASHINGTON, D.C.

Volume 39 ■ Number 35

PART II



ENVIRONMENTAL PROTECTION AGENCY

PHOSPHATE
MANUFACTURING POINT
SOURCE CATEGORY

Effluent Guidelines and Standards

Title 40-Protection of the Environment CHAPTER I-ENVIRONMENTAL PROTECTION AGENCY

SUBCHAPTER N-EFFLUENT GUIDELINES AND STANDARDS PART 422—PHOSPHATE MANUFACTUR-ING POINT SOURCE CATEGORY

Effluent Limitation Guidelines

On September 7, 1973 notice was published in the FEDERAL REGISTER (38 FR 24470), that the Environmental Protection Agency (EPA or Agency) was proposing effluent limitations guidelines for existing sources and standards of performance and pretreatment standards for new sources within the phosphorus producing, phosphorous consuming and phosphate subcategories of the phosphate manufacturing category of point sources. The purpose of this notice is to effluent limitations establish final guidelines for existing sources and standards of performance and pretreatment standards for new sources in the phosphate manufacturing category of point sources, by amending 40 CFR Chapter I, Subchapter N, to add a new Part 422. This final rulemaking is promulgated pursuant to sections 301, 304 (b) and (c), 306 (b) and (c) and 307(c) of the Federal Water-Pollution Control Act. as amended, (the Act); 33 U.S.C. 1251, 1311, 1314 (b) and (c), 1316 (b) and (c) and 1317(c) 86 Stat. 816 et seq.; Pub. L. 92-500. Regulations regrading cooling water intake structures for all categories of point sources under section 316(b) of the Act will be promulgated in 40 CFR Part

In addition, the EPA is simultaneously proposing a separate provision which appears in the proposed rules section of the FEDERAL REGISTER, stating the application of the limitations and standards set forth below to users of publicly owned treatment works which are subject to pretreatment standards under section 307(b) of the Act. The basis of that proposed regulation is set forth in the associated notice of proposed rulemaking.

The legal basis, methodology and factual conclusions which support promulgation of this regulation were set forth in substantial detail in the notice of public review procedures published August 6, 1973 (38 FR 21202) and in the notice of proposed rulemaking for the phosphate manufacturing category. In addition, the regulations as proposed were supported by two other documents: (1) The document entitled "Development Document for Proposed Effluent Limitations Guidelines and New Source Performance Standards for the PHOSPHOROUS DERIVED CHEMICALS Segment of the Phosphate Manufacturing Point Source Category" (August 1973) and (2) the document entitled "Economic Analysis of Proposed Effluent Guidelines, The In-dustrial Phosphate Industry" (August 1973). Both of these documents were made available to the public and circulated to interested persons at approximately the time of publication of the notice of proposed rulemaking.

Interested persons were invited to

participate in the rulemaking by submitting written comments within 30 days from the date of publication. Prior public participation in the form of solicited comments and responses from the States, Federal agencies, and other interested parties were described in the preamble to the proposed regulation. The EPA has considered carefully all of the comments received and a discussion of these comments with the Agency's response thereto follows.

The regulation as promulgated contains some significant departures from the proposed regulation. The following discussion outlines the reasons why these changes were made and why other suggested changes were not made.

(a) Summary of comments.

The following responded to the request for written comments contained in the preamble to the proposed regulation: Mobil Oil Corporation; FMC Corporation; Manufacturing Chemists Associa-Stauffer Chemical Company; tion: Hooker Industrial Chemicals; University of Florida, Institute of Food and Agricultural Sciences; Pasaic Valley Sewerage Commissioners; County Sanitation District of Los Angeles County; U.S. Department of Commerce; and Monsanto Industrial Chemicals Company. Each of the comments received was carefully reviewed and analyzed. The following is a summary of the significant comments and the Agency's response to those comments,

(1) It was stated by several commenters that a no discharge guideline legally could not be applied until 1985.

EPA has determined that in the case of certain subcategories of the phosphate manufacturing category, either the best practicable control technology currently available or the best available technology economically achievable is the total recirculation of process waste water. In section 101(a)(2) of the Act, Congress established as a national goal the elimination of the discharge of pollutants into navigable waters by 1985. However, Congress also set requirements for technology based standards in sections 301, 304(b) and 306 which require the maximum degree of reduction of pollutant discharges prior to 1985, which is consistent with the technical and economic factors to be taken into account under sections 304(b) and 306 of the Act (notably, standards are to be set for 1977 and 1983 compliance, but no regulations are to be promulgated for 1985). The Agency will require the effluent reduction attainable by the best practicable control technology when establishing regulations under section 304(b) of the Act whether that reduction is to some degree of permitted discharge or down to no discharge.

(2) It was commented that best practicable control technology currently available should be based on a large number of plants if not the entire industry.

The Agency defines best practicable control technology currently available to be the average of the best existing performance by plants of various sizes, ages and unit processes within each industrial

category or subcategory. This average is not based upon a broad range of plants within an industrial category or subcategory, but is based upon performance levels achieved by exemplary plants. In those industrial categories where present control and treatment practices are uniformly inadequate, a higher level of control than any currently in place may be required if the technology to achieve such higher level can be practicably applied by July 1, 1977. Thus best practicable control technology currently available may be based on a few, one or no ex-emplary plants within that industrial category.

(3) Several commenters pointed out that runoff cannot be kept out of treatment ponds in some terrain and that a state of no discharge cannot be met dur-

ing periods of heavy rainfall.

Treatment ponds can be built or modified to minimize, if not climinate, intrusion of storm runoff originating outside of the pond retaining walls. Such ponds can also have sufficient free board as to retain rainfall. Those subcategories which employ treatment ponds are water consuming processes which can utilize the captured rainfall. Hence, there should be no need to discharge pond water.

(4) It was mentioned that the recycle of process waste water for food grade calcium phosphates would cause the Food and Drug Administration (FDA) speci-fications for process water to be violated.

Water is used in the manufacture of food grade calcium phosphates for reasons of transport or homogeneity, but not for purification. Hence the waste water contains the product, but nothing harmful to the product, which is what the FDA specifications are designed to protect.

The problem of segregation of waste waters, water balances, and storm water runoff, however, are sufficiently great that the industry will not be able to achieve total recycle by 1977 and yet meet FDA specifications. A discharge will therefore be allowed after suitable treatment as demonstrated in the Development Document.

(5) It was suggested that a limitation for dissolved solids be dropped for best practicable control technology currently available, since in the concentration range of the constituents involved, technology to achieve the proposed degree of

control does not exist.

The limitation proposed was based on the raw waste load and was not intended to force treatment of dissolved solids. The limitation was intended to prohibit additional dissolved solids from being discharged. However, due to variability in the process this limitation may require such treatment. Therefore, the limitation on dissolved solids is replaced by limits on specific dissolved constituents that are considered to be the principal pollutants or characteristics to be controlled.

(6) It was suggested that the limits proposed by the Effluent Standards and Water Quality Information Advisory Committee (ESWQIAC) for the phos-

phorus production subcategory be used.

The ESWQIAC limits include two

additional phosphorus plants as exemplary. EPA has since accepted these plants as exhibiting best practicable control technology and has allowed a discharge based upon the data in the Development Document for the treatment capabilities of these plants. Therefore, although the Agency does not agree with the underlying rationale for establishing the ESWQIAC limits, the data in the Development Document does support the specific limits proposed by ESWQIAC.

(7) It was requested that discharges to publicly owned treatment works be

allowed.

Pretreatment and discharge of waste waters to publicly owned treatment works from existing sources in the phosphate category are covered in the pretreatment guidelines that are proposed at the time this limitation is promulgated. Comments relating to existing sources should be directed to that regulation. For new sources the Agency considers the process waste water constituents from the phosphorus preduction and phosphorus consuming subcategories to be incompatible with publicly owned treatment works, and that the treatment technology that has been described in Section VII of the Development Document can achieve no discharge of process waste water pollutants to either navigable waters or to publicly owned treatment works.

The principal process waste water pollutant for the pnosphate subcategory is phosphate, which cannot be adequately treated by primary or secondary treat-ment works. Phosphate, however, is considered to be compatible with publicly owned treatment works designed, constructed and operated to achieve optimal removal of dissolved phosphate, and a discharge to such treatment works will

be allowed.

(8) Several commenters the capital costs of the model treatment systems to be underestimated and that the economic impact is understated.

The Agency has recalculated, in Section VIII of the Development Document, the cost information on model treatment systems as the result of additional data submitted by industry. The calculated changes do not affect the conclusions of the economic analysis, since the percentage increase in capital cost is not significant.

(9) It was stated that some plants were incorrectly cited as to whether they were achieving no discharge or not.

The necessary qualifiers were added to the descriptions in the Development Document of those plants that were disputed. The changes that were made involved treatment of certain portions of the process waste water and do not substantially affect the overall conclusions of the Development Document.

(10) The general comment was made that zero discharge cannot be achieved for some products.

The Agency has reevaluated the data

and is allowing a discharge for phosphorus and food grade calcium phosphates production for the 1977 limitation for the reasons given in comments (4) and (6). The Agency believes the technology exists to substantiate a no discharge of process waste water limitations for the remaining manufacturing processes.

(11) A range of values was recommended rather than a single value for

each parameter.

The Agency considers that the limitations already represent ranges, taking into account differences in process, age, size and other factors. Subcategorization has been done to take these factors into account with different limitations for each subcategory. Within subcategories, exceptions to the limitations have been made for certain manufacturing segments or products, constituting a wider range. Each numerical limitation represents a maximum average of daily values over a given period of time. This in effect represents a range from zero up to the specific limitation. A maximum varia-tion is also given for each maximum average limitation. The Agency considers an upper and lower limitation to be somewhat meaningless since the actual range would be from zero to the upper limitation. Thus, in effect, the argument becomes one of making the EPA limitations less severe, since it has been suggested that the EPA limitations should be the lower limits. The EPA limitations are achievable and currently available.

(12) One commenter stated that there is no correlation of contractor validation data with data or conclusions contained

in the Development Document.

Data calculated from samples collected by the contractor were not primarily intended to form the basis of a limitation. The validation data was mainly used by the contractor to determine if existing data can be correctly used to establish limitations. Such a correlation does not appear in the Development Document, but the raw data may be reviewed at the EPA Information Center, Room 227, West Waterside Mall, Washington, Tower. D.C. Only the data that appears in the Development Document was used in formulating the effluent limitations.

(13) It was stated that the evaporation of PCi3 and POCl3 process waste waters would require an excessive

amount of energy.

The 1983 limitations for the manufacture of PCl3 and POCl3 are no discharge of process waste water pollutants which can be accomplished by maximum waste water recycle and evaporation of the blowdown. The Agency believes that sufficient time exists for each plant to be examined by the industry in order to minimize water usage, maximize solar evaporation and thus minimize power usage.

(14) It was pointed out that percolation can occur from waste water ponds.

Infiltration of pond water to ground water cannot be controlled by this regulation. Possible problems have been pointed out in the preamble to the proposed regulation (38 FR 24470) and

methods of correction have been suggested.

(15) The comment was made that no discharge of process waste water pollutants is an impractical limitation because the methods of analysis are not suificiently sensitive.

Where no discharge of process waste water pollutants is prescribed, model treatment systems are described in the Development Document in which no process waste waters are discharged, hence no process waste waters pollutants. For the purpose of determining if process waste water pollutants have contami-nated other allowable discharges, this limitation is considered to be the detectable limit of the appropriate analytical method

(16) It was suggested that no discharge of process waste water pollutants should mean no discharge that would degrade the quality of the receiving

stream.

The Act is quite specific in stating the difference between limitations based on treatment technology and limitations handled on a case by case basis in order to insure that water quality standards are attained. The limitations promulgated in this regulation are technology based and independent of water quality standards, as is the intent of the Act.

(17) It was suggested that concentrations (mg/1) should be used with instantaneous maximum values instead of

production based limitations.

Production based limitations such as kg of pollutant per kkg of product insure that dilution is not practiced. Doily maximum values are also promulgated.

(18) One commenter stated that phosphate limitations for the phosphate industry are unduly restrictive when compared to phosphate limitations for publicly owned treatment works.

The Act establishes separate time tables for industrial and municipal sources. Limitations for phosphate discharges from publicly owned treatment works will be proposed at a later date. However, effluent guidelines for industrial sources are to be based on the best practicable, best available, and best demonstrated technologies for each separate category and separate economic considerations for each category.

(19) One company agreed with the proposed limitation for the manufacture of phosphoric acid, phosphoreus trichloride and phosphorous oxychloride.

(20) Another company suggested that no discharge of process waste water pollutants for the manufacture of phos-phorus, sodium tripolyphosphate and food grade calcium phosphate is the best available technology rather than the best practicable control technology.

The Agency has reviewed the data and agrees that a discharge resulting from the manufacture of phosphorus and food grade calcium phosphate should be allowed for the 1977 limitations for the reasons listed in comments (4) and (6). However no discharge of process waste water pollutants still qualifies as best practicable control technology currently

available for the manufacture of sodium tripolyphosphate.

(b) Revision of the proposed regula-

tion prior to promulgation. As a result of public comments and continuing review and evaluation of the proposed regulation by the EPA, the fol-

lowing changes have been made in the regulation.

(1) Minor adjustments have been made to reflect the fact that an increased number of definitions and analytical methods have been included in 40 CFR 401 and are incorporated by reference in 40 CFR 401 and are incorporated by there subparts. reference (

(2) A discharge will be allowed for the 1977 limitation for the phosphorus production subcategory. This change was made in response to comments (2), (6), (10) and (20) in section (a) above. The limitations are based upon two plants that discharge process waste water from treatment facilities exhibiting exemplary

performance.

(3) The total dissolved solids limitations for the manufacture of phosphorus trichloride and phosphorus oxychloride have been replaced with limitations on specific dissolved species. This change was made in response to comment (5) in

section (a) above.

(4) A discharge will be allowed for the 1977 limitation for the manufacture of food grade calcium phosphate. The reasons for this change are listed in comments (4), (6) and (20). The limitations are based upon the volume of water used in the process and the technological capability of treating suspended solids

and total phosphorus.

(5) Section 304(b) (1) (B) of the Act provides for "guidelines" to implement the uniform national standards of Section 301(b) (1) (A). Thus Congress recognized that some flexibility was necessary in order to take into account the complexity of the industrial world with respect to the practicability of pollution control technology. In conformity with the Congressional intent and in recognition of the possible failure of these regulations to account for all factors bearing on the practicability of control technology, it was concluded that some provision was needed to authorize flexibility in the strict application of the limitations contained in the regulation where required by special circumstances applicable to individual dischargers. Accordingly, a provision allowing flexibility in the application of the limitations representing best practicable control technology currently available has been added to each subpart, to account for special circumstances that may not have been adequately accounted for when these regulations were developed.

(c) Economic impact.

The changes that were made to the proposed regulations for the phosphate category do not substantially affect the initial economic analysis. These changes center about the feasibility of recycling treated process waste water rather than different treatment systems. Additional cost data was received from the phos-

phate manufacturing industry, and a careful review of the costs of alternate treatment technologies was performed. Appropriate upward changes to the cost estimates were made in Section VIII of These Development Document. changes likewise do not affect the conclusions of the economic impact study, since the cost increases are minimal.

(d) Cost-benefit analysis.

The detrimental effects of the constituents of waste waters now discharged by point sources within the phosphorus production subcategory, phosphorus consuming subcategory and the phosphate subcategory of the phosphate manufacturing point source category are discussed in Section VI of the report entitled "Development Document for Efilu-Limitations Guidelines for the PHOSPHORUS DERIVED CHEMICALS Manufacturing Segment of the Phosphate Manufacturing Point Source Category" (February 1974). It is not feasible to quantify in economic terms, particularly on a national basis, the costs resulting from the discharge of these pollutants to our Nation's waterways. Nevertheless, as indicated in Section VI, the pollutants discharged have substantial and damaging impacts on the quality of water and therefore on its capacity to support healthy populations of wildlife, fish and other aquatic wildlife and on its suitability for industrial, recreational and drinking water supply uses.

The total cost of implementing the effluent limitations guidelines includes the direct capital and operating costs of the pollution control technology employed to achieve compliance and the indirect economic and environmental costs identified in Section VIII and in the supplementary report entitled "Economic Analysis of Proposed Effluent Guidelines for the INDUSTRIAL PHOSPHATE IN-DUSTRY" (August 1973). Implementing the effluent limitations guidelines will substantially reduce the environmental harm which would otherwise be attributable to the continued discharge of polluted waste waters from existing and newly constructed plants in the phosmanufacturing · industry. The Agency believes that the benefits of thus reducing the pollutants discharged justify the associated costs which, though substantial in absolute terms, represent a relatively small percentage of the total capital investment in the industry.

(e) Publication of information processes, procedures or operating methods which result in the elimination or reduction of the discharge of pollutants.

In conformance with the requirements of section 304(c), a manual entitled, "Development Document for Effluent Limitations Guidelines and New Source Performance Standards for the PHOS-PHORUS DERIVED CHEMICALS Segment of the Phosphate Manufacturing Point Source Category," has been published and is available for purchase from the Government Printing Office, Washington, D.C. 20401, for a nominal fee.

(f) Final rulemaking.

In consideration of the foregoing, 40

CFR Chapter I. Subchapter N is hereby amended by adding a new Part 422, Phos-

phate Manufacturing Point Source Category, to read as set forth below. This final regulation is promulgated as set forth below and shall be effective April 22,

Dated: January 31, 1974.

JOHN QUARLES. Acting Administrator.

Subpart A-Phosphorus Production Subcategory

Sec.

Applicability; description of the 422.10 phosphorus production subcate-

Specialized definitions. 422.11

Eifluent limitations guidelines repre-422.12 senting the degree of effluent re-duction attainable by the applicacation of the best practicable control technology currently available.

Effluent limitations guidelines rep-422.13 resenting the degree of effluent reduction attainable by the application of the best available technology economically achievable.

Reserved. 422.14

Standards of performance for new 422.15 sources.

Pretreatment standards for new 422 16 sources

Subpart B-Phosphorus Consuming Subcategory

422.20 Applicability; description of the phosphorus consuming subcatecorv

Specialized definitions. 422.21

Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best practicable

trol technology currently available.
422.23 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best available technology economically achievable.

Standards of performance for new 422.25 sources

Pretreatment standards for new sources.

Subpart C-Phosphate Subcategory

Applicability; description of phosphate subcategory.

Specialized definitions. 422.31

Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best practicable trol technology currently available.

422.33 Effluent limitations guidelines representing the degree of effluent re-duction attainable by the application of the best available technology economically achievable.

Reserved.

Standards of performance for new sources.

422.36 Pretreatment standards for new

-Phosphorus Production Subpart A-Subcategory

§ 422.10 Applicability; description of the phosphorus production subcategory.

The provisions of this subpart are applicable to discharges of pollutants re-

suiting from the production of phosphorus and ferrophosphorus by smelting of phosphate ore.

§ 422.11 Specialized definitions.

For the purpose of this subpart:

(a) Except as provided below, the general definitions, abbreviations and methods of analysis set forth in 40 CFR 401 shall apply to this subpart.

§ 422.12 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available.

In establishing the limitations set forth in this section, EPA took into account all information it was able to collect, develop and solicit with respect to factors (such as age and size of plant, raw materials, manufacturing processes, products produced, treatment technology available, energy requirements and costs) which can affect the industry subcategorization and effluent levels established. It is, however, possible that data which would afthese limitations have not been available and, as a result, these limitations should be adjusted for certain plants in this industry. An individual discharger or other interested person may submit evidence to the Regional Administrator (or to the State, if the State has the authority to issue NPDES permits) that factors relating to the equipment or facilities involved, the process applied, or other such factors related to such discharger are fundamentally different from the factors considered in the establishment of the guidelines. On the basis of such evidence or other available information, the Regional Administrator (or the State) will make a written finding that such factors are or are not fundamentally different for that facility compared to those specified in the Development Document. If such fundamentally different factors are found to exist, the Regional Administrator or the State shall establish for the discharger effluent limitations in the NPDES permit either more or less stringent than the limitations established herein, to the extent dictated by such fundamentally different factors. Such limitations must be approved by the Administrator of the Environmental Protection Agency. The Administrator may approve or disapprove such limitations, specify other limitations, or initiate proceedings to revise these regulations.

The following limitations establish the quantity or quality of pollutants or pollutant properties, controlled by this section, which may be discharged by a point source subject to the provisions of this subpart after application of the best practicable control technology currently available:

Effluent limitations

Effluent characteristic Maximum for any 1 day

Average of daily values for 30 consecutive days shall not exceed

	Metric units (kg/kkg of product)		
TSS			
	English units (lb/1	,000 lb of product)	
TSS. Total phosphorus Fluoride. Elemental phosphorus.	. 30	0.5 .15 .05	

§ 422.13 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best available technology economically achievable.

pH..... Within the range 6.0 to 9.0.

The following limitations establish the quantity or quality of pollutants or pollutant properties which may be discharged by a point source subject to the provisions of this subpart after application of the best available technology economically achievable: there shall be no discharge of process waste water pollutants to navigable waters.

§ 422.14 [Reserved]

§ 422.15 Standards of performance for new sources.

The following standards of performance establish the quantity or quality of pollutants or pollutant properties which may be discharged by a new source subject to the provisions of this subpart: there shall be no discharge of process waste water pollutants to navigable waters.

§ 422.16 Pretreatment standards for

The pretreatment standards under section 307(c) of the Act for a source within the phosphorus production subcategory, which is a user of a publicly owned treatment works (and which would be a new source subject to section 306 of the Act, if it were to discharge pollutants to the navigable waters), shall be the standard set forth in 40 CFR Part 128, except that, for the purpose of this section, § 128.133 of this title shall be amended to read as follows:

"In addition to the prohibitions set forth in 40 CFR 128.131, the pretreatment standard for incompatible pollutants introduced into a publicly owned treatment works shall be the standard of performance for new sources specified in 40 CFR 422.15; provided that, if the publicly owned treatment works which receives the pollutants is committed, in its NPDES permit, to remove a specified percentage of any incompatible pollutant, the

pre:reatment standard applicable to users of such treatment works shall, except in the case of standards providing for no discharge of pollutants, be correspondingly reduced in stringency for that pollutant."

Subpart B—Phosphorus Consuming Subcategory

§ 422.20 Applicability; description of the phosphorus consuming subcategory.

The provisions of this subpart are applicable to discharges of pollutants resulting from the manufacture of phosphoric acid, phosphorus pentoxide, phosphorus pentasulfide, phosphorus tri-chloride, and phosphorus oxychloride directly from elemental phosphorus. The production of phosphorus trichloride and phosphorus oxychloride creates waste water pollutants not completely amenable to the procedures utilized for best practicable control technology currently available. The standards set for phosphorus trichloride manufacture phosphorus oxychloride manufacture, accordingly, must differ from the rest of the subcategory at this level of treatment.

§ 422.21 Specialized definitions.

For the purpose of this subpart:

(a) Except as provided below, the general definitions, abbreviations and methods of analysis set forth in 40 CFR Part 401 shall apply to this subpart.

§ 422.22 Effluent limitations guidelines, representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available.

In establishing the limitations set forth in this section, EPA took into account all information it was able to collect, develop and solicit with respect to factors (such as age and size of plant, raw materials, manufacturing processes, products pro-duced, treatment technology available, energy requirements and costs) which can affect the industry subcategorization and effluent levels established. It is, however, possible that data which would affect these limitations have not been available and, as a result, these limitations should be adjusted for certain plants in this industry. An individual discharger or other interested person may submit evidence to the Regional Administrator (or to the State, if the State has the authority to issue NPDES permits) that factors relating to the equipment or facilities involved, the process applied, or other such factors related to such discharger are funda-mentally different from the factors considered in the establishment of the guidelines. On the basis of such evidence or other available information, the Regional Administrator (or the State) will make a written finding that such factors are or are not fundamentally different for that

facility compared to those specified in the Development Document. If such fundamentally different factors are found to exist, the Regional Administrator or the State shall establish for the discharger effluent limitations in the NPDES permit either more or less stringent than the limitations established herein, to the extent dictated by such fundamentally different factors. Such limitations must be approved by the Administrator of the Environmental Protection Agency. The Administrator may approve or disapprove such limitations, specify other limitations, or initiate proceedings to revise these regulations.

The following limitations establish the quantity or quality of pollutants or pollutant properties which may be discharged by a point source subject to the provisions of this subpart after application of the best practicable control technology currently available:

(a) There shall be no discharge of process waste water pollutants to navigable waters from the manufacture of phosphoric acid, phosphorus pentoxide, or phosphorus pentasulfide.

(b) The following limitations establish the quantity or quality of pollutants or pollutant properties, controlled by this paragraph, which may be discharged in process waste water from phosphorus trichloride manufacturing on the basis of production:

	Effluent limitations		
Effluent characteristic	Maximum for any 1 day	Average of daily values for 30 consecutive days shall not exceed—	
	Metric units (kg/kkg of product)		
TSS Total phosphorus Arsenie Elemental phosphorus. pllorus.	1. 1 1. 6 .0001 No detectable o	0.7 .8 .00005 quantity.	
	Within the range 6.0 to 9.0.		
	English units (lb/1,000 lb of product)		
TSS	1. 4 1. 6 .0001 No detectable	0.7 0.8 .00005 quantity.	
pH	. Within the range 6.0 to 9.0.		

(c) The following limitations establish the quantity or quality of pollutants or pollutant properties, controlled by this paragraph, which may be discharged in process waste water from phosphorus oxychloride manufacturing on the basis of production:

	Emuent limitations	
Effluent characteristic	Maximum for - any 1 day	Average of daily values for 30 consecutive days shall not exceed—
	Metric units (kg/kkg of product)	
TSS Total phosphorus pH	0.3 .31 Within the range	0. 15 . 17 e 6.0 to 9.0,
·	English units (lb/	1,000 lb of product)
TSS. Total phosphorus pll	0.3 .34 Within the range	0. 15 . 17 e 6.0 to 9.9.

§ 422.23 · Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best available technology economically achievable.

The following limitations establish the quantity or quality of pollutants or pollutant properties which may be discharged by a point source subject to the provisions of this subpart after application of the best available technology economically achievable: there shall be no discharge to navigable waters of process waste water pollutants to resulting from the manufacture of phosphoric acid, phosphorus pentoxide, phosphorus pentasulfide, phosphorus trichloride or phosphorus oxychloride.

§ 422.21 [Reserved]

§ 422.25 Standards of performance for new sources.

The following standards of performance establish the quantity or quality of pollutants or pollutant properties which may be discharged by a new source subject to the provisions of this subpart: There shall be no discharge of process waste water pollutants to navigable waters.

§ 422.26 Pretreatment standards for

The pretreatment standards under section 307(c) of the Act for a source within the phosphorus consuming subcategory, which is a user of a publicly owned treatment works (and which would be a new source subject to section 306 of the Act, if it were to discharge pollutants to the navigable waters), shall be the standard set forth in 40 CFR Part 128, except that, for the purpose of this section, § 128.133 of this title shall be amended to read as follows:

"In addition to the prohibitions set forth in 40 CFR 128.131, the pretreatment standard for incompatible pollutants introduced into a publicly owned treatment works shall be the standard of performance for new sources specified in 40 CFR 422.25; provided that, if the publicly owned treatment works which receives the pollutants is committed, in its NPDES permit, to remove a specified percentage of any incompatible pollutant, the pretreatment standard applicable to users of such treatment works shall, except in the case of standards providing for no discharge of pollutants, be correspondingly reduced in stringency for that pollutant."

Subpart C-Phosphate Subcategory

§ 422.30 Applicability; description of the phosphate subcategory.

The provisions of this subpart are applicable to discharges of pollutants resulting from the manufacture of sodium tripolyphosphate, animal feed grade, calcium phosphate and human food grade calcium phosphate from phosphoric acid. The production of human food grade calcium phosphate creates waste water pollutants not completely amenable to the procedures utilized for best practicable control technology currently available. The standards set for human food grade calcium phosphates accordingly must

differ from the rest of the subcategory at this level of treatment.

§ 422.31 Specialized definitions.

For the purpose of this subpart:

(a) Except as provided below, the general definitions, abbreviations and methods of analysis set forth in 40 CFR 401 shall apply to this subpart.

§ 422.32 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available.

In establishing the limitations set forth in this section. EPA took into account all information it was able to collect, develop and solicit with respect to factors (such as age and size of plant, raw materials, manufacturing processes, products produced, treatment technology available, energy requirements and costs) which can affect the industry subcategorization and effluent levels established. It is, however, possible that data which would affect these limitations have not been available and, as a result, these limitations should be adjusted for certain plants in this industry. An individual discharge or other interested person may submit evidence to the Regional Administrator (or to the State, if the State has the authority to issue NPDES permits) that factors relating to the equipment or facilities involved, the process applied, or other such factors related to such discharger are fundamentally different from the factors considered in the establishment of the guidelines. On the basis of such evidence or other available information, the Regional Administrator (or the State) will make a written finding that such factors are or are not fundamentally different for that facility compared to those specified in the Development Document. If such fundamentally different factors are found to exist, the Regional Administrator or the State shall establish for the discharger effluent limitations in the NPDES permit either more or less stringent than the limitations established herein, to the extent dictated by such fundamentally different factors. Such limitations must be approved by the Administrator of the Environmental Protection Agency. The Administrator mag approve or disapprove such limitations, specify other limitations, or initiate proceedings to revise these regulations.

The following limitations establish the quantity or quality of pollutants or pollutant properties which may be discharged by a point source subject to the provisions of this subpart after application of the best practicable control technology currently available:

(a) There shall be no discharge of process waste water pollutants to navigable waters from the manufacture of sodium tripolyphosphate, or animal feed grade calcium phosphate.

(b) The following limitations establish the quantity or quality of pollutants or pollutant properties, controlled by this paragraph, which may be discharged in process waste water from human food grade calcium phosphate manufacturing based on production:

RULES AND REGULATIONS

Effluent characteristic	Maximum for any 1 day	Average of daily values for 30 consecutive days shall not exceed	
	Metric units (kg/kkg of product)		
TSS Total phosphorus pH	0.12 .06 Within the rang	0. 06 . 03 e 6.0 to 9.0.	
	English units (li	/1,000 lb of product	
TSS Total phosphorus pll	0.12 .06 Within the rang	0. 06 . 03 ge 6.0 to 9.0.	

Effluent limitations

§ 422.33 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best available technology economically achievable.

The following limitations establish the the quantity or quality of pollutants or pollutant properties which may be discharged by a point source subject to the provisions of this subpart after application of the best available technology

economically achievable: There shall be no discharge to navigable waters of process waste water pollutants resulting from the manufacture of sodium tripolyphosphate, animal feed grade calcium phosphate, or human food grade calcium phosphate.

§ 422.34 [Reserved]

§ 422.35 Standards of performance for new sources.

The following standards of performance establish the quantity or quality of pollutants or pollutant properties which may be discharged by a new source subject to the provisions of this subpart: There shall be no discharge of process waste water pollutants to navigable waters.

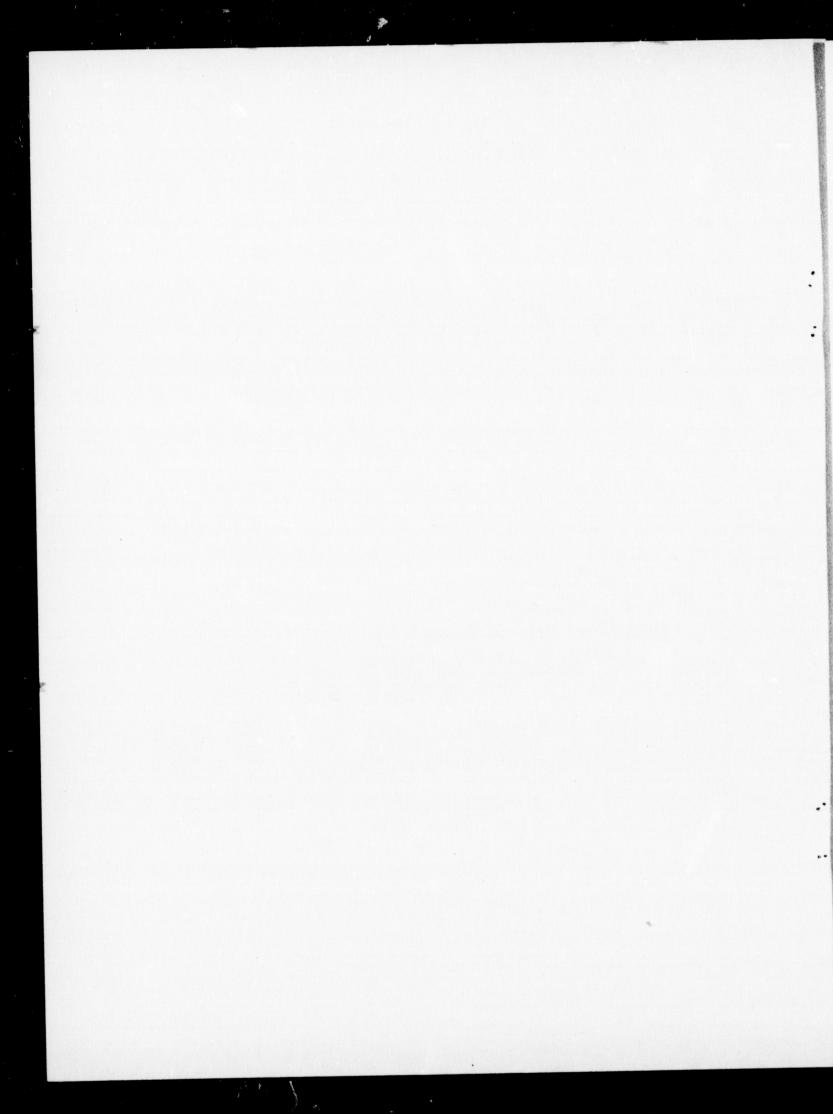
§ 422.36 Pretreatment standards . for new sources.

The pretreatment standards under section 307(c) of the Act for a source within the phosphate subcategory, which is a user of a publicly owned treatment works (and which would be

a new source subject to section 306 of the Act, if it were to discharge pollutants to the navigable waters), shall be the standard set forth in 40 CFR Part 128, except that process waste waters from this subcategory are not considered to be incompatible with publicly owned treatment works designed, constructed and operated to remove dissolved phosphate and, for the purpose of this section, § 128.133 of this title shall be amended to read as follows:

"In addition to the prohibitions set forth in 40 CFR 128.131, the preireatment standard for incompatible pollutants introduced into a publicly owned treatment works shall be the standard of performance for new sources specified in 40 CFR 422.35; provided that, if the publicly owned treatment works which receives the pollutants is committed, in its NPDES permit, to remove a specified percentage of any incompatible pollutant, the pretreatment standard applicable to users of such treatment works shall, except in the case of standards providing for no discharge of pollutants, be correspondingly reduced in stringency for that pollutant."

[FR Doc.74-3496 Filed 2-19-74;8:45 am]



APPENDIX C

The tabulation of actions outside of Section 509 includes:

- (1) Other EPA action under Section 304. Section 304 is entitled "Information and <u>Guidelines</u>." Not one of the promulgations by EPA is covered by Section 509. Among them are --
- (a) <u>Section 304(a)</u>. EPA must establish the water quality criteria on which State water quality standards under Section 303 are based. State water quality standards are the alternative to technology for <u>effluent limitations</u> under Section 301(b)(1)(C) and 302.
- (b) <u>Section 304(c)</u>. EPA must publish information on the means of reducing effluent discharges for the purpose of meeting the new source standards of performance under Section 306. Standards for new plants are covered under Section 509(b), but technological benchmarks for new source standards are not. Section 304(c) serves a function somewhat similar to Section 304(b)'s identification of effluent reductions and the factors to be assessed in determining effluent limitations based on best practicable and best available technology.
- (c) <u>Section 304(d)</u>. EPA must publish information on "effluent reductions attainable" through the application of secondary treatment by public sewer systems. Secondary treatment is the technological basis for public sewer system "effluent

limitations" under Section 301(b)(1)(B). EPA also must publish information on alternative waste management techniques meeting the criteria of best practicable waste treatment technology. Best practicable technology is the basis for the Section 301(b)(2) standard for public sewers. Section 304(d) is not mentioned in Section 509.

(d) Section 304(e). EPA must publish "(1) guidelines for identifying the nature and extent of nonpoint sources of pollutants and (2) processes, procedures, and methods to control pollution from" agricultural, construction, subsurface-disposal, and other "nonpoint" sources. Such guidelines are not academic studies for use by the States in their discretion. Control of non-point sources is a mandatory part of State plans for area-wide management. Section 208(b)(2)(F) to (I) and (K), 33 U.S.C. §1288 (b)(2)(F) to (I) and (K). Area-wide waste management programs were considered to be among the most important of the 1972 Act. (See H.R. Rep. No. 92-911, 92d Cong., 2d Sess., at 72, 95 (1972).) No discharge permit may be issued contrary to an area-wide plan. (Section 208(e), 33 U.S.C. §1288(e).) Grants for public sewer systems may not be issued except as consistent with an area-wide plan. (Section 208(d).) No less than the technological effluent limitations under Section 301(b), area-wide waste management plans are a key to the Congress' program for clean water and to discharge permits for public sewer systems and industrial sources.

- (e) Section 304(f). EPA is required to promulgate pretreatment standards for existing sources. (Section 307(b).) It also must promulgate pretreatment standards for new sources. (Section 307(c).) Both, through the 1973 amendments to the Act, are covered by Section 509(b). But EPA has other obligations with respect to the quality of industrial effluent prior to its introduction into a public sewer system. Under Section 304(f), EPA must publish "quidelines for pretreatment of pollutants which he determines are not susceptible to treatment by publicly owned treatment works." Significantly, these guidelines are for the purpose of "assisting the States in carrying out programs under Section 402" by establishing conditions of NPDES permits for public sewer systems consistent with the Act and the guidelines are to "designate the category or categories of treatment works to which the guidelines apply." There is no suggestion that the provisions of Section 509 apply to the pretreatment guidelines of Section 304 (f).
- (f) <u>Section 304(g)</u>. EPA is required to "promulgate <u>quidelines</u> establishing test procedures for analysis of pollutants." These guidelines are applied in connection with permit applications, are applied as a part of reporting requirements in conditions of issued permits, and are used in enforcement actions.

- (g) Section 304(h). EPA must "promulgate guidelines for the purpose of establishing uniform application forms and other minimum requirements for the establishment from owners and operators of point sources" and "promulgate guidelines establishing minimum procedural and other elements of any State program under Section 402." EPA's approval or disapproval of a particular State program is covered by Section 509; the guidelines for State programs are not.
 - (2) Regulations and Guidelines Governing the Issuance of Permits--
- (a) Ocean Discharge Criteria (Section 403). The Act requires EPA to "promulgate guidelines for determining the degradation of the waters of the territorial seas, the contiguous zone, and the oceans." Section 403(c)(1), 33 U.S.C. §1343(c)(1). The substantive requirement of salt water protection which these standards implement is parallel and of importance equal to the technological requirements of Section 301(b). Permits under Section 402 into the waters covered by the guidelines may not be issued "except in compliance with such guidelines." Section 403(a), 33 U.S.C. §1343(a).
- (Section 404). Authority to issue permits for disposal of dredged or fill intended into navigable water resides with the Corps of Engineers. The designation of disposal sites in such permits must be from "application of guidelines" established by EPA "in con-

junction with" the Corps. Section 404 guidelines for permits are not under Section 509.

- (c) Regulations on Disposal of Sewage Sludge (Section 405).

 An EPA permit must be obtained for the disposal in navigable waters from public treatment systems. Section 405(a), 33 U.S.C. §1345(a).

 Such permits are to be based on EPA "regulations governing the disposal of sewage sludge." Section 405(b), 33 U.S.C. §1345(b).
- (3) Other Guidelines and Regulations. Not all EPA guidelines and regulations provide bases for permits, but many in addition to those in Section 304 have an important regulatory impact.
- (a) <u>User Charge Guidelines (Section 204(b)(2))</u>. Assessment of user charges from industrial sewers is a requirement for construction grants and NPDES for public sewer systems. Sections 204(b)(1), 33 U.S.C. §1284(b)(1); Section 402(b)(9), 33 U.S.C. §1342(b)(9) "Guidelines" issued by EPA govern such charges. Section 204(b)(2), 33 U.S.C. §1284(b)(2).
- (b) <u>Guidelines and Regulations for Issuance of Construction</u>

 <u>Grants (Sections 201(g)(4), 205(a), and 212(2)(c))</u>. Upgrading of

 public sewage treatment by infusion of Federal funds is a critical

 aspect of the 1972 Act. Many important standards and conditions

 for Federal grants and construction are to be established by EPA

regulations and guidelines. Sections 201(g)(4), 33 U.S.C. §1281 (g)(4); 205(a), 33 U.S.C. §1285(a); 212(2)(C), 33 U.S.C. §1292 (2)(C). Neither these regulations and guidelines nor EPA issuance (or refusal to issue) construction grants are within the scope of Section 509.

- authorized to permit the discharge of pollutants from aquaculture projects. Section 318(a), 33 U.S.C. §1328(a). To implement that authority, EPA must "by regulation * * * establish any procedures and guidelines [the Administrator] deems necessary." Section 318(a), 33 U.S.C. §1328(a).
- (4) Major Regulatory Actions. Further demonstration of the limited scope of Section 509 lies in the fact that it does not cover a large number of important EPA regulatory actions--
- (a) Area-Wide Waste Management Plans (Section 208).

 In addition to the guidelines noted above for the control of nonpoint sources of pollution in area-wide waste management, the

 1972 Act gives EPA authority to issue guidelines and requires
 approval of various elements of this basic program. Section 208

 (a) (1) and (7), (b) (1) and (3), and (c) (2), 33 U.S.C. §1288

 (a) (1) and (7), (b) (1) and (3), and (c) (2).

- adopted water quality standards (Section 303). Stateadopted water quality standards are subject to approval by EPA
 and, if not approved, such standards must be promulgated by EPA.
 Similarly, State plans for allocating allowable waste loads among
 discharges must be presented to EPA with EPA required to promulgate
 a substitute if it determines that the State allocation does not
 meet the requirements of the Act. Section 303, 33 U.S.C. §1313.
 The water quality standards and the allocation implement the
 requirements of Sections 301(b)(1)(C) and 302 for water-quality
 based effluent limitations.
- (c) Spills of Oil and Hazardous Materials (Section 311).

 Section 311 authorizes substantial fines and penalties for spills of oil and hazardous materials. Section 311(b)(2)(B) and (b)(5) and (6), as amended, 33 U.S.C. §1321(b)(2)(B) and (b)(5) and (6).

 EPA is required to develop regulations governing the discharges (spills) for which liability may occur and the magnitude of the liability and requirements applicable to individual plants for prevention of such incidents. Section 311(b)(2), (3), and (4) and (j), 33 U.S.C. §1321(b)(1), (2), and (3) and (j).



ENVIRONMENTAL PROTECTION AGENCY MEMORANDUM
ON JUDICIAL REVIEW OF EFFLUENT LIMITATIONS GUIDELINES
February 25, 1974

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APPENDIX D

MEMORANDUM

To: Acting Assistant ADministrator for Air and Water Programs (AW-443)

From: Assistant Administrator for Enforcement and General Counsel (EG-329)

Subject: Judicial Review of Effluent Limitations Guidelines

The question has been raised by a number of concerned companies regarding whether petitions for judicial review of the 1983 effluent limitations (best available control technology economically achievable) which are presently being promulgated by EPA pursuant to Sections' 301 and 304 of the Federal Water Pollution Control Act, as amended (the Act), 33 U.S.C. Sections 1311 and 1314, must be filed within 90 days of the date of promulgation. Section 509(b) of the Act provides that

(b) (1) Review of the Administrator's action ... (E) in approving or promulgating any effluent limitation or other limitation under section 301, 302, or 306, ... may be had by any interested person in the Circuit Court of Appeals of the United States for the Federal judicial district in which such person resides or transacts such business upon application by such person. Any such application shall be made within ninety days from the date of such determination, approval, promulgation, issuance or denial, or after such date only if such application is based solely on grounds which arose after such ninetieth day.

While this will require that an effluent limitation which is not to be implemented until 1983 be judicially reviewed approximately nine years earlier, this clearly is the intent of Congress. The use of the term "any" in Section 509 (b) leaves no doubt that the 1983 limitations are to be reviewed in the same manner as the 1977 limitations and other Section 301 limitations. Therefore, any challenge to a 1983 effluent limitation must be filed within 90 days of the date of promulgation or the party will be precluded from challenging the standard. Section 509 (b) (2) provides that "Action of the Administrator with respect to which review could have been obtained under paragraph (1) of this subsection shall not be subject to judicial review in any civil or criminal proceeding for enforcement." The validity of such a restriction has been judicially approved in Getty Oil Company (Eastern Operations) v. Ruckelshaus, 467 F.2d 349 (3rd Cir. 1972), cert. denied, 93 S.Ct. 937 (1973) which involved the similar restriction established in Section 307 of the Clean Air Act.

While Section 509(b) (1) may present some problems in reviewing limitations based in part on estimated and projected information, the Act contains adequate provisions to avoid any harsh results. Most importantly, the 90-day limitation does not apply where the petition for review "is based solely on grounds which arose after such ninetieth day." Thus, an affected party may file for judicial review (or for additional review) at a later date where the basis for the action is facts or other information which became available after the 90 days had passed. For example, a company would be able to obtain judicial review of an effluent limitation after the 90-day period if the estimations or predictions on which it was based do not occur as expected.

Another mitigating factor is that Section 304 (b) requires the Administrator, following promulgation of regulations establishing guidelines for effluent limitations, to "..., at least annually thereafter revise, if appropriate, such regulations." Moreover, Seftion 301 (d) provides that "Any effluent limitation required by paragraph (2) of subsection (b) of this section (the 1983 limitations) shall be reviewed at least every five years and, if appropriate, revised pursuant to the procedure established under such paragraph." Clearly, Congress has provided for adequate continuing review of the 1983 limitations and any information relevant to determining the necessity for a revision should be surfaced. Thus, any company, or other interested party, has available to it a basis for requesting a revision of a standard where subsequent events appear to justify such revision. A failure or refusal of EPA to do so based on such information would authorize judicial review on the basis of the provision cited in the preceding paragraph. For these reasons, the 90-day requirement in Section 509 (b) does not appear to be an unreasonable limitation on judicial review of the 1983 effluent limitations.

A final factor which should be mentioned relates to the relationship between Sections 301 and 304. Section 509 (b) makes no mention of judicial review of the Section 304 (b) guidelines for effluent limitations. However, the effluent limitations guidelines which the Agency is presently issuing under Section 304 (b) are also being issued Section 301 and establish effluent limitations under Section 301. Thus, these guidelines fall within the provision in Section 509 (b) for judicial review within 90 days of "any effluent or other limitation under section 301." The effluent limitations guidelines promulgated by the Agency will implement both Section 301 and Section 304. Since it would be impossible to challenge the Section 301 limitations without challenging the Section 304 (b) guidelines, the requirements in Section 509 (b) that limitations promulgated pursuant to Section 301 be challenged in the United States Court of Appeals and within 90 days almost must be considered to include challenges to Section 304 guidelines.

/s/ Alan G. Kirk, II

APPENDIX E

Computation of Energy Requirements for Evaporation of PCl₃ and POCl₃ Effluent

EPA, in computing the energy usage given in the Development Document, App. 1767 apparently forgot to convert from English tons to metric tons (1000 kilograms) by multiplying the former by 1.1. With this correction, EPA's energy requirements for PCl₃ plants would be 322 1000 kilowatt hours (KWH) per metric ton (Kkg) rather than 293 KWH/Kkg; energy usage for POCl₃ plants would be 160 KWH/Kkg rather than 146 KWH/Kkg. Once that correction is made, standard engineering calculations demonstrate that EPA's energy figures are for one-tenth the flow given by EPA for PCl₃ and POCl₃ plants.

requirements for zero discharge at a PCl₃ plant as 293 KWH/Kkg of product. The total waste flow without refrigeration given by EPA is 1200 gallons per ton. The thermal energy to evaporate 1200 gallons of waste in a single effect evaporator, using EPA's figure of 1000 BTU's for each pound of water evaporated, is:

1200 gallons x 8.33 lb. x 1000 BTU = 9,996,000 BTU/Ton ton terms of electrical energy:

The corrected figure of 322 KWH/Kkg is less than one tenth of this value, and therefore must be evaporation of one-tenth of the flow

without any allowance for energy required to operate refrigerated condensers to achieve that flow.

The raw waste load for POCl₃ is given as 600 gallons, or one-half the above value. The same calculation with this flow gives equivalent results.

APPENDIX F

The pertinent provisions of the Food Chemicals Codex (2d edition) are as follows:

SODIUM TRIPOLYPHOSPHATE

Pentasodium Triphosphate; Triphosphate; Sodium Triphosphate

Na P.O.

Mol. wt. 367.86

DESCRIPTION

Sodium tripolyphosphate is anhydrous or contains 6 molecules of water of hydration. It occurs as white, slightly hygroscopic granules, or as a powder. It is freely soluble in water. The pH of a 1 in 100 solution is about 9.5.

IDENTIFICATION

A. A 1 in 20 solution gives positive tests for Sodium, page 928.

B. To 1 ml. of a 1 in 100 solution add a few drops of silver nitrate T.S. A white precipitate is formed which is soluble in diluted nitric acid T.S.

SPECIFICATIONS

Assay. Not less than 85.0 percent of Na.P.O.o.

Loss on drying. Not more than 0.7 percent.

Limits of Impurities

Arsenic (as As). Not more than 3 parts per million (0.0003 percent).

Fluoride. Not more than 50 parts per million (0.005 percent).

Heavy metals (as Pb). Not more than 10 parts per million (0.001 percent).

Insoluble substances. Not more than 0.1 percent.

Lead. Not more than 5 parts per million (0.0005 percent).

TESTS

Assay

Reagents and Solutions

Potassium Acctate Buffer (pH 5.0). Dissolve 78.5 grams of potassium acctate in 1000 ml. of water, and adjust the pH of the solution to 5.0

with acetic acid. Add a few mg. of mercuric iodide to inhibit mold growth.

0.3 M Potassium Chloride Solution. Dissolve 22.35 grams of potassium chloride in water, add 5 ml. of Potassium Acctate Buffer, dilute with water to 1000 ml., and mix. Add a few mg. of mercuric iodide.

0.6 M Potassium Chloride Solution. Dissolve 44.7 grams of potassium chloride in water, add 5 ml. of Potassium Acetate Buffer, dilute with water to 1000 ml., and mix. Add a few mg. of mercuric iodide.

1 M Potassium Chloride Solution. Dissolve 74.5 grams of potassium chloride in water, add 5 ml. of Potassium Acetate Buffer, dilute to 1000 ml. with water, and mix. Add a few mg. of mercuric iodide.

Chromatographic Column. Use a standard chromatographic column, 20- to 40-cm. in length, 20- to 28-mm. in inside diameter, with a sealed-in, coarse porosity fritted disk. If a stopcock is not provided, attach a stopcock having a 3- to 4-mm. diameter bore to the outlet of the column with a short length of flexible vinyl tubing.

Procedure. Close the column stopcock, fill the space between the fritted disk and the stopcock with water, and connect a vacuum line to the stopcock. Prepare a 1:1 water slurry of Dowex 1 × 8, chloride form, 100-200 or 200-400 mesh, or a comparable grade of styrenedivinylbenzene ion exchange resin, and decant off any very fine particles and any foam. Do this two or three times or until no more finely suspended material or foaming is observed. Fill the column with the slurry, and open the stopcock to allow the vacuum to pack the resir. bed until the water level is slightly above the top of the resin, then immediately close the stopcock. Do not allow the liquid level to fall below the resin level at any time. Repeat this procedure until the packed resin column is 15 cm. (about 6 inches) above the fritted disk. Place one circle of tightly fitting glass fiber filter paper on top of the resin bed, then place a perforated polyethylene disk on top of the paper. Alternatively, a loosely packed plug of glass wool may be placed on top of the bed. Close the top of the column with a rubber stopper in which a 7.6 cm. length of capillary tubing (1.5-mm. i.d., 7 mm. o.d.) has been iserted through the center, so that about 12 mm. of the tubing extends through the bottom of the stopper. Connect the top of the capillary tubing to the stem of a 500-ml. separator with flexible vinyl tubing, and clamp the separator to a ring stand above the column. Wash the column by adding 100 ml. of water to the separator with all stopcocks closed. First open the separator stopcock, then open the column stopcock. The rate of flow should be about 5 ml. per minute. When the separator is empty, close the stopcock on the column, then close the separator stopcock.

Transfer about 500 mg. of the sample, accurately weighed, into a 250-ml. volumetric flask, dissolve and dilute to volume with water, and mix. Transfer 10.0 ml. of this solution into the separator, open both stopcocks, and allow the solution to drain into the column, rinsing the separator with 20 ml. of water. Discard the eluate.

Add 370 ml. of 0.3 M Potassium Chloride Solution to the separator, and allow this solution to pass through the column, discarding the eluate. Add 250 ml. of 0.6 M Potassium Chloride Solution to the column, allow the solution to pass through the column, and receive the cluate in a 400-ml. beaker. (To ensure a clean column for the next run, pass 100 ml. of 1 M Potassium Chloride Solution through the column, and then follow with 100 ml. of water. Discard all washings.) To the beaker add 15 ml. of nitric acid, mix, and boil for 15 to 20 minutes. Add methyl orange T.S., and neutralize the solution with stronger ammonia T.S. Add 1 gram of ammonium nitrate crystals, stir to dissolve, and cool. Add 15 ml. of ammonium molybdate T.S., with stirring, and stir vigorously for 3 minutes, or allow to stand with occasional stirring for 10 to 15 minutes. Filter the contents of the beaker with suction through a 6-7 mm. paper pulp filter pad supported in a 25 mm. porcelain disk. The filter pad should be covered with a suspension of infusorial earth. After the contents of the beaker have been transferred to the filter, wash the beaker with five 10-ml. portions of a 1 in 100 solution of sodium or potassium nitrate, passing the washings through the filter, then wash the filter with five 5-ml. portions of the wash solution. Return the filter pad and the precipitate to the beaker, wash the funnel thoroughly with water into the beaker, and dilute to about 150 ml. Add 0.1 N sodium hydroxide from a buret until the yellow precipitate is dissolved, then add 5 to 8 ml. in excess. Add phenolphthalein T.S., and titrate the excess alkali with 0.1 N nitric acid. Finally, titrate with 0.1 N sodium hydroxide to the first appearance of the pink color. The difference between the total volume of 0.1 N sodium hydroxide added and the volume of nitric acid required represents the volume, V, in ml., of 0.1 N sodium hydroxide consumed by the phosphomolybdate complex. Calculate the quantity, in mg., of Na3P4O10 in the sample taken by the formula $0.533 \times 25 V$.

Loss on drying, page 931. Dry at 105° for 1 hour.

Arsenic. A solution of 1 gram in 35 ml. of water meets the requirements of the Arsenic Test, page 865.

Fluoride. Weigh accurately 1.0 gram, and proceed as directed in the Fluoride Limit Test, page 917.

Heavy metals. A solution of 2 grams in 25 ml. of water meets the requirements of the *Heavy Metals Test*, page 920, using 20 mcg. of lead ion (Pb) in the control (Solution A).

Insoluble substances. Dissolve 10 grams in 100 ml. of hot water, and filter through a tared filtering crucible. Wash the insoluble residue with hot water, dry at 105° for 2 hours, cool, and weigh.

Lead. A solution of 1 gram in 20 ml. of water meets the requirements of the Lead Limit Test, page 929, using 5 mcg. of lead ion (Pb) in the control.

Packaging and storage. Store in tight containers. Functional use in foods. Texturizer.

CALCIUM PHOSPHATE, DIBASIC

Dicalcium Phosphate

CaHPO, 211,0

Mol. wt. 172.09

DESCRIPTION

Dibasic calcium phosphate is anhydrous or contains two molecules of water of hydration. It occurs as a white, odorless, tasteless powder which is stable in air. It is practically insoluble in water, but is readily soluble in dilute hydrochloric and nitric acids. It is insoluble in alcohol.

IDENTIFICATION

A. Dissolve about 100 mg. by warming with a mixture of 5 ml. of diluted hydrochloric acid T.S. and 5 ml. of water, add 2.5 ml. of ammonia T.S., dropwise, with shaking, and then add 5 ml. of ammonium oxalate T.S. A white precipitate is formed.

B. To 10 ml. of a warm solution (1 in 100) in a slight excess of nitric acid add 10 ml. of ammonium molybdate T.S. A yellow precipitate of ammonium phosphomolybdate is formed.

SPECIFICATIONS

Assay. CaHPO, (anhydrous), not less than 39.0 percent and not more than 42.0 percent of CaO; CaHPO, 2H₂O (dihydrate), not less than 31.9 percent and not more than 33.5 percent of CaO.

Loss on ignition. CaHPO4 (anhydrous), between 7.0 and 8.5 percent; CaHPO4.2H2O (dihydrate), between 24.5 and 26.5 percent.

Limits of Impurities

Arsenic (as As). Not more than 3 parts per million (0.0003 percent).

Fluoride. Not more than 50 parts per million (0.005 percent). Heavy metals (as Pb). Not more than 30 parts per million (0.003 percent).

Lead. Not more than 5 parts per million (0.0005 percent).

TESTS

Assay. Weigh accurately a portion of the sample equivalent to about 325 mg. of CallPO₄, dissolved in 10 ml. of diluted hydrochloric acid T.S., add about 120 ml. of water and a few drops of methyl orange T.S., and boil for 5 minutes, keeping the volume and pH of the solution constant during the boiling period by adding hydrochloric acid or water, if necessary. Add 2 drops of methyl red T.S. and 30 ml. of ammonium oxalate T.S., then add dropwise, with constant stirring, a mixture of equal volumes of ammonia T.S. and water until the pink color of the indicator just disappears. Digest on a steam bath for 30 minutes, cool to room temperature, allow the precipitate to settle, and filter the supernatant liquid through an asbestos mat in a Gooch crucible, using

gentle suction. Wash the precipitate in the beaker with about 30 ml of cold (below 20°) wash solution, prepared by diluting 10 ml, of ammonium oxalate T.S. to 1000 ml. Allow the precipitate to rettle, and pour the supernatant liquid through the filter. Repeat this washing by decantation three more times. Using the wash solution, transfer the precipitate as completely as possible to the filter. Finally, wash the beaker and the filter with two 10-ml, portions of cold (below 20°) water. Place the Gooch crucible in the beaker, and add 100 ml, of water and 50 ml, of cold dilute sulfuric acid (1 in 6). Add from a buret 35 ml, of 0.1 N potassium permanganate, and stir until the color disappears. Heat to about 70°, and complete the titration with 0.1 N potassium permanganate. Each ml, of 0.1 N potassium permanganate in equivalent to 2.80 mg, of CaO.

Loss on ignition. Weigh accurately about 1 gram, and ignite, preferably in a mussle furnace, at 800° to 825° to constant weight.

Arsenic. A solution of 1 gram in 5 ml. of diluted hydrochloric acid T.S. meets the requirements of the Arsenic Test, page 865.

Fluoride. Weigh accurately 1.0 gram, and proceed as directed in the Fluoride Limit Test, page 917.

Heavy metals. Warm 1.33 grams with 5 ml. of diluted hydrochloric acid T.S. until no more dissolves, dilute to 50 ml. with water, and filter. A 25-ml. portion of the filtrate meets the requirements of the *Heavy Metals Test*, page 920, using 20 mcg. of lead ion (Pb) in the control (Solution A).

Lead. A solution of 250 mg. in 5 ml. of diluted hydrochloric acid T.S. meets the requirements of the Lead Limit Test, page 929, using 1.25 mcg. of lead ion (Pb) in the control.

Packaging and storage. Store in well-closed containers.

Labeling. Label to indicate whether it is anhydrous or the dihydrate. Functional use in foods. Dough conditioner; nutrient supplement; yeast food.

CALCIUM PHOSPHATE, MONOBASIC

Monocalcium Phosphate; Calcium Biphosphate; Acid Calcium Phosphate

Ca(H2PO4);

Mol. wt. 234.05

DESCRIPTION

Monobasic calcium phosphate is anhydrous or contains one molecule of water of hydration, but, due to its deliquescent nature, more than the calculated amount of water may be present. It occurs as white crystals or granules, or as a granular powder. It is sparingly soluble in water and is insoluble in alcohol.

IDENTIFICATION

A. Dissolve 100 mg. by warming in a mixture of 2 ml. of deluted hydrochloric acid T.S. and 8 ml. of water, and add 5 ml. of ammonium oxalate T.S. A white precipitate forms.

B. To a warm solution of the sample in a slight excess of nitric acid add ammonium molybdate T.S. A yellow precipitate forms.

SPECIFICATIONS

Assay. Ca(H₂PO₄)₂ (anhydrous), not less than 23.5 percent and not more than 25.6 percent of CaO; Ca(H₂PO₄)₂. H₂O (monohydrate), not less than 22.2 percent and not more than 24.7 percent of CaO.

Loss on drying. Ca(H₂PO₄)₂.H₂O (monohydrate), not more than 0.6 percent.

Loss on ignition. Ca(H₂PO₄); (anhydrous), between 14.0 and 15.5 percent.

Neutralizing value. Not less than 80.

Limits of Impurities

Arsenic (as As). Not more than 3 parts per million (0.0003 per-

Fluoride. Not more than 25 parts per million (0.0025 percent). Heavy metals (as Pb). Not more than 30 parts per million (0.003 percent).

Lead. Not more than 5 parts per million (0.0005 percent).

TESTS

Assay. Weigh accurately a portion of the sample equivalent to about 475 mg. of Ca(H2PO4)2, dissolve it in 10 ml. of diluted hydrochloric acid T.S., add a few drops of methyl orange T.S., and boil for 5 minutes, keeping the volume and pH of the solution constant during the boiling period by adding hydrochloric acid or water, if necessary. Add 2 drops of methyl red T.S. and 30 ml. of ammonium oxalate T.S., then add dropwise, with constant stirring, a mixture of equal volumes of ammonia T.S. and water until the pink color of the indicator just disappears. Digest on a steam bath for 30 minutes, cool to room temperature, allow the precipitate to settle, and filter the supernatant liquid through an asbestos mat in a Gooch crucible, using gentle suction Wash the precipitate in the beaker with about 30 ml. of cold (below 20) wash solution, prepared by diluting 10 ml. of ammonium oxalate To to 1000 ml. Allow the precipitate to settle, and pour the supernation liquid through the filter. Repeat this washing by decantation there more times. Using the wash solution, transfer the precipitate as completely as possible to the filter. Finally, wash the beaker and the filter with two 10-ml. portions of cold (below 20°) water. Place the Good crucible in the beaker, and add 100 ml. of water and 50 ml. of cold dilute sulfuric acid (1 in 6). Add from a buret 35 ml. of 0.1 N potassium permanganate, and stir until the color disappears. Heat to about 70", and complete the titration with 0.1 N potassium permanganate. Each ml. of 0.1 N potassium permanganate is equivalent to 2.804 mg. of CaO.

Loss on drying, page 931. Dry Ca(II.PO4)2. H.O (monohydrate) at 60° for 3 hours.

Loss on ignition. Weigh accurately about 1 gram of Ca(H.PO.), (anhydrous), and ignite, preferably in a muflle furnace, at 800° for 30

Neutralizing value. Transfer 840 mg., accurately weighed, into a 375-ml. casserole, add 24 ml. of cold water, and stir for a few seconds. For the monohydrate, add 90.0 ml. of 0.1 N sodium hydroxide, and bring the suspension to a boil in exactly 2 minutes; for the anhydrous product, add 100.0 ml. of 0.1 N sodium hydroxide, and stir intermittently for about 5 minutes before heating to a boil. Boil for 1 minute. While the solution is still boiling hot, add 1 drop of phenolphthalein T.S., and titrate the excess a kali with 0.2 N hydrochloric acid until the pink color just disappears. Calculate the neutralizing value, as parts of NaHCO, equivalent to 100 parts of the sample, by the formula V-2v, in which V is the volume, in ml., of 0.1 N sodium hydroxide added, and v the volume, in ml., of 0.2 N hydrochloric acid consumed in the titration.

Arsenic. A solution of 1 gram in 5 ml. of diluted hydrochloric acid T.S. meets the requirements of the Arsenic Test, page 865.

Fluoride. Weigh accurately 2.0 grams, and proceed as directed in the Fluoride Limit Test, page 917.

Heavy metals. Warm 1.33 grams with 5 ml. of diluted hydrochloric acid T.S. until no more dissolves, dilute to 50 ml. with water, and filter. A 25-ml. portion of the filtrate meets the requirements of the Heavy Metals Test, page 920, using 20 mcg. of lead ion (Pb) in the control (Solution A).

Lead. A solution of 250 mg. in 5 ml. of diluted hydrochloric acid T.S. meets the requirements of the Lead Limit Test, page 929, using 1.25 mcg. of lead ion (Pb) in the control.

Packaging and storage. Store in well-closed containers.

Functional use in foods. Buffer; dough conditioner; firming agent; leavening agent; nutrient; dietary supplement; yeast food; sequestrant.

CALCIUM PHOSPHATE, TRIBASIC

Tricalcium Phosphate; Precipitated Calcium Phosphate

DESCRIPTION

Tribasic calcium phosphate consists of a variable mixture of calcium phosphates having the approximate composition of 10CaO.3P2Os.H2O. It occurs as a white, odorless, tasteless powder which is stable in air.

It is insoluble in alcohol and almost insoluble in water, but it dissolves readily in dilute hydrochloric and nitric acids.

IDENTIFICATION

A. To a warm solution of the sample in a slight excess of nitric acid add ammonium molybdate T.S. A yellow precipitate forms.

B. Dissolve about 100 mg. by warming with 5 ml. of diluted hydrochloric acid T.S. and 5 ml. of water, add 1 ml. of ammonia T.S., dropwise, with shaking, and then add 5 ml. of ammonium oxalate T.S. A white precipitate forms.

SPECIFICATIONS

Assay. Not less than the equivalent of 90.0 percent of Ca₃(PO₄), calculated on the ignited basis.

Titration value. Passes test.

Loss on ignition. Not more than 10 percent.

Limits of Impurities

Arsenic (as As). Not more than 3 parts per million (0.0003 percent).

Fluoride. Not more than 50 parts per million (0.005 percent). Heavy metals (as Pb). Not more than 30 parts per million (0.003 percent).

Lead. Not more than 5 parts per million (0.0005 percent).

TESTS

Assay. Weigh accurately about 200 mg., and dissolve it in a mixture of 25 ml. of water and 10 ml. of diluted nitric acid T.S. Filter, if necessary, wash any precipitate, add sufficient ammonia T.S. to the filtrate to produce a slight precipitate, then dissolve the precipitate by the addition of 1 ml. of diluted nitric acid T.S. Adjust the temperature to about 50°, add 75 ml. of ammonium molybdate T.S., and maintain the temperature at about 50° for 30 minutes, stirring occasionally. Wash the precipitate once or twice with water by decantation, using from 30 to 40 ml. each time. Transfer the precipitate to a filter, and wash with potassium nitrate solution (1 in 100) until the last washing is not acid to litmus paper. Transfer the precipitate and filter to the precipitate is dissolved, add 3 drops of phenolphthalein T.S., and then titrate the excess alkali with 1 N sulfuric acid. Each ml. of 1 N sodium hydroxide corresponds to 6.743 mg. of Ca₁(PO₁)₂.

Titration value. Weigh accurately about 2 grams, and dissolve, by warming, in 50.0 ml. of 1 N hydrochloric acid. Cool, add 1 or 2 drops of methyl orange T.S., and slowly titrate the excess of 1 N hydrochloric acid with 1 N sodium hydroxide to a yellow color, vigorously shaking the mixture during the titration. Not less than 12.5 ml. and not more than 13.8 ml. of 1 N hydrochloric acid is consumed for each gram of salt, calculated on the ignited basis.

Loss on ignition. Weigh accurately about 1 gram, and ignite, preferably in a muffle furnace, at 800° to 825° to constant weight.

Arsenic. A solution of 1 gram in 25 ml. of diluted hydrochloric acid T.S. meets the requirements of the Arsenic Test, page 865.

Fluoride. Weigh accurately 1.0 gram, and proceed as directed in the Fluoride Limit Test, page 917.

Heavy metals. Warm 1.33 grams with 7 ml. of diluted hydrochloric acid T.S. until no more dissolves, dilute to 50 ml. with water, and filter. A 25-ml. portion of the filtrate meets the requirements of the *Heavy Metals Test*, page 920, using 20 mcg. of lead ion (Pb) in the control (Solution A). (Note: Filter the mixture after pH adjustment.)

Lead. A solution of 250 mg. in 5 ml. of diluted hydrochloric acid T.S. meets the requirements of the *Lead Limit Test*, page 929, using 1.25 mcg. of lead ion (Pb) in the control.

Packaging and storage. Store in well-closed containers.

Functional use in foods. Anticaking agent; buffer; nutrient; dietary supplement.

IN THE UNITED STATES COURT OF APPEALS FOR THE SECOND CIRCUIT

HOOKER CHEMICALS & PLASTICS CORP., ET AL.,

Petitioners,

v.

No. 74-1687

RUSSELL E. TRAIN, ETC.,

Respondent.

CERTIFICATE OF SERVICE

I hereby certify that on this 10th day of September, 1974

two copies of the Brief for Petitioners were served on counsel for

Respondent by placing same in the United States mail, first class,

postage prepaid, properly addressed to John J. Zimmerman, Attorney,

Department of Justice, Washington, Doc.

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